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DISEASES CAUSED BY BACTERIA AND FUNGI.

EVANS, Alice C. (1936). **Studies on Hemolytic Streptococci. II. Streptococcus pyogenes.**—*J. Bact.* **31.** 611-624. 4 tables. [32 refs.] [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 855. Signed C. C. OKELL].

This paper begins with a discussion of the taxonomy of *Str. pyogenes* (Rosenbach). The following are designated as the more important characters of the species: specific susceptibility to certain bacteriophages; fermentation of lactose, salicin and trehalose; non-fermentation of sorbitol and mannitol; final *p*H in glucose broth *p*H five or higher; sodium hippurate not fermented; few strains capable of growth on 10 per cent. bile agar; nearly all strains dissolve human fibrin (32 of 33 tested); virulence for mice generally low; probably mostly belong to Lancefield's serological Group A. Data are presented to show that *Str. pyogenes* as here defined is the streptococcus most commonly associated with human disease. It apparently causes the majority of cases of scarlet fever (61·6 per cent.) and of erysipelas (51·2 per cent.). It causes 46·8 per cent. of cases of puerperal fever. It is responsible for a comparatively small percentage of epidemics of sore throat (16·6 per cent. of 24 strains examined).

I. KÓLAYLI, C., KOYGUOGLU, R., & ESIN, I. (1936). Résultats obtenus dans l'étude expérimentale des matières pathologiques du charbon bactéridien. [**Diagnosis of Anthrax from Carcass Material**].—*Rec. Méd. vét.* **112.** 405-406.

II. PÖTTING. (1936). Milzbrand beim Pferde und Menschen. [**Anthrax in Horses and Man**].—*Tierärztl. Rdsch.* **42.** 653-654.

III. JANUSCHKE, E. (1936). Beiträge zur Pathogenität und Biologie des Milzbrandbazillus. I. Der Verlauf des experimentellen Kaninchenmilzbrandes. II. Ein Beitrag zur Beeinflussung des experimentellen Kaninchenmilzbrandes durch Immun- und durch Normalserum. III. Ueber das Schicksal abgeschwächter Milzbrandstämme im Kaninchenkörper. [**Biology and Pathogenicity of** *Bacillus anthracis*: **Anthrax in Rabbits (Infection and Immunization)**].—*Prag. tierärztl. Arch.* **16.** 1-16, 31-37 and 53-67. 23 tables. [Numerous refs.]

I. For the rapid diagnosis of anthrax, Ascoli's precipitin test and microscopic examination of stained smears are indispensable procedures. Skin taken from

a decaying anthrax carcass, if extracted, provides antigen which will give a positive Ascoli reaction. About 85 days after death, the antigen extracted from skin no longer reacts in a specific manner.

II. The description of an outbreak of anthrax affecting a horse and two human beings. The infection probably originated from a sick cow slaughtered by these individuals two weeks earlier. It could not be ascertained whether or not the horse became infected from contact with these persons.

III. A study of the pathogenesis of experimental anthrax in rabbits. Following subcut. injection of young rabbits with virulent bacilli, a primary bacteraemia occurred within 15 minutes and the organisms disappeared from the blood within one to six hours. A secondary bacteraemia appeared within 12 to 24 hours, which persisted until death. In old rabbits bacteria were not seen in the blood until 24 hours after inoculation at the earliest. Old rabbits survived longer than young ones. Intravenous injection was followed by very similar results. Injection of spores (both subcut. and intrav.) was followed by a period of inactivity ; thereafter a mild bacteraemia supervened which persisted until death.

In rabbits receiving immune serum 24 hours prior to intravenous injection of virulent anthrax bacilli, the initial bacteraemia lasted less than five minutes, and the blood remained sterile for the next four days. Death ultimately ensued, but duration of life was prolonged compared to that of rabbits similarly infected but receiving normal serum or no treatment at all. Specific antiserum administered after infection and, at the onset of the secondary bacteraemia, prolonged life for 12 hours longer than that of the controls.

Following injection of avirulent bacilli (Pasteur I strain) infection persisted in rabbits for months, during which period a very slight bacteraemia could occasionally be demonstrated. The injection into g. pigs of blood taken from these rabbits when the bacilli were present showed that the organisms remained avirulent. Animals inoculated with avirulent strains gave positive serologic reactions.—E. J. PULLINGER.

ZOFIJEVSKI, V. (1935). Glukozídska kultura po Hruški, novo cjepivo za imunizaciju protiv bedrenice. [**Hruska's Glucoside Culture, a New Vaccine for Immunization against Anthrax**].—*Jugoslov. vet. Glasn.* **15.** 216-225. 4 tables. [12 refs.]

The writer studied the preparation of Hruska's glucoside vaccine in the latter's laboratory, and has since produced it at the Predovic Serum Institute, Zagreb. The vaccine has been tested on over 200,000 cattle and sheep, by HRUSKA and ZOFIJEVSKI with the following results :– the vaccine is both harmless and cheap ; with a single dose (0·5 c.c. for adult cattle, 0·3 c.c. for calves, and 0·25 c.c. for sheep) strong immunity is obtained within 10 to 14 days and lasts for about 6 months. It is not suitable for use on horses, for which Sobernheim's method should be retained.—B. OSWALD (SKOPLJE).

HUPBAUER, A., & GOJKOVIC, D. (1936). Rezultati cijepljenja glukozidskom vakcinom u god. 1935, i nekoja kritička promatranja o djelovanju te vakcine. [**Results of Inoculation against Anthrax with Glucoside Vaccine in 1935 and Some Critical Observations on the Action of this Vaccine**].—*Jugoslov. vet. Glasn.* **16.** 43-53. 2 tables. [Numerous refs.]

A single dose vaccine containing a suspension of anthrax bacilli (Pasteur II) in a solution of glucoside is made by the authors at the State Bacteriological and Serological Institute, Križevci, Yugoslavia according to Hruska's method. This vaccine is probably similar to that first produced by Mazzuchi in Italy, and later by

Jezic and Kodrnja in Yugoslavia. It was tested on over 12,000 cattle and sheep, and none of them died from the vaccination. The immunity obtained is strong and usually lasts about eight months, but in severely infected districts it may only last four months. Severe local and systemic reactions sometimes follow vaccination, partly due to the glucoside in the vaccine.

It may therefore be said that this method cannot yet be considered perfected, though better results may be expected.—B. Oswald (Skoplje).

Homutov, P. (1936). Le rôle de la saponine dans la vaccination anticharbonneuse glucosidée. [**Role of Saponin in an Anti-Anthrax Glucoside Vaccine**].—*Ann. Inst. Pasteur.* **56.** 535-583. 5 figs., 6 tables. [Numerous refs.]

This article is a critical study of the role of saponin in the special anti-anthrax vaccine of Mazzuchi. The first experiments described had as their object an examination of the *in vitro* action of saponin on anthrax bacilli. A culture of extreme virulence was sown in broth and on a solid medium, both of which contained a concentration of saponin varying from 0·5 to 4 %. Growth was inhibited and the morphological characters of the organism underwent marked modification. The second part of the article is an investigation of the part played by post-vaccinal oedema in the development of immunity, namely, whether its role is to delay the multiplication and diffusion of bacteria at the site of the injection or whether it exerts some other influence. Experiments were carried out in g. pigs with a local oedema produced by the injection of croton oil and tapioca. In both cases there was a delay in the diffusion of anthrax bacilli from the site of inoculation, but not to an extent sufficient to prevent a subsequent general and fatal infection. Part three is concerned with the toxicity of saponin for anthrax bacilli and spores. In the experiments recorded the organisms were submitted to the action of 2% saponin for over nine months. This resulted in the death of most of the bacilli in the vaccine.

The remainder of the paper is a study of the immunization process as induced by the use of Mazzuchi's vaccine. The undoubted value of the method is admitted, but the author seeks a scientific explanation. He finds that it is not, as was at first thought, due to the local inflammatory oedema induced by the presence of saponin in the live vaccine that immunization becomes possible, but rather to the effect of penetration of the saponin into the bacterial capsule. Multiplication is thereby delayed and antibody production is given an opportunity to develop. He also finds that the employment of an extremely virulent culture is not essential to success and that it is, in fact, contra-indicated. A reduction in the percentage content of saponin may also be effected with advantage.—C. Davenport.

I. László, F. (1936). Pachydermia tuberculosa. [**Tuberculous Pachydermia**].—*Dtsch. tierärztl. Wschr.* **44.** 564-565. [1 ref.]

II. Montgomerie, R. F., & Rowlands, W. T. (1936). **The Incidence of Tuberculosis among 2,270 Cattle in Four Rearing Districts in North Wales.**—*Vet. Rec.* **48.** 961-968. 6 tables. [5 refs.]

III. Koch, W. (1936). Statistische Untersuchungen über die Tuberkulose der Rinder in Bayern. [**Bovine Tuberculosis in Bavaria**].—*Tierärztl. Rdsch.* **42.** 645-650 and 670-672. 5 figs., 7 tables. [7 refs.]

IV. Jacob, E. (1936). Ueber die Tuberkulose der weiblichen Geschlechtsorgane des Rindes an Hand pathologischanatomischer Untersuchungen am Schlachthof zu Giessen. [**Genital Tuberculosis in Cattle**].—*Inaug. Diss., Giessen.* pp. 52. 5 figs. on 3 plates, 1 table. [Numerous refs.]

I. L. describes a case of tuberculous pachydermia in a sow, the lesion being

in the region of the navel. The skin and subcutis were swollen as a result of proliferative changes and showed multiple yellowish-white nodules. These nodules had caseous centres and had a histological appearance characteristic of porcine tubercles. Infection was due to the bovine type of *Mycobact. tuberculosis*.

II. The incidence of bovine tuberculosis in all cattle, other than new-born calves, in four breeding districts in North Wales has been ascertained, diagnosis being based upon the tuberculin test. The districts were chosen at random regardless of the standard of farm hygiene. It is therefore thought that the figures given represent the true position as regards the incidence of bovine tuberculosis in the cattle-rearing areas of North Wales.

Of 2,270 cattle in 101 farms, 5% reacted. On 57 farms no reactors were detected and on 15 additional farms all the home-bred stock were clean. It is stressed that, with such a low incidence of infection, a campaign for complete eradication would not prove too costly. It would, however, be necessary to guard against reintroduction of infection by enforcing stringent regulations regarding the importation of stock. In this connexion it should be remembered that an animal which has passed the tuberculin test, but has come from an infected farm, may have picked up infection very recently and be instrumental in spreading it. The incidence amongst 647 cows was 10·2%. [This figure compares very favourably with that of 40%, generally considered to be the percentage of tuberculous cows in Great Britain, but it must be remembered that the total cattle population of North Wales is not much greater than that of a single milk producing county such as Shropshire so that the question of relative density of population comes into play].

III. Abattoir returns reveal a steady increase (from 18% in 1923 to 29% in 1934) in the number of animals condemned annually. There is a similar though much less striking increase in the incidence of tuberculosis in calves. An attempt has been made to ascertain the cause and prevention of this increase by a study of farm hygiene in the districts involved. It is considered that, in part, this spread is natural in view of farming conditions, as the voluntary scheme for the eradication of tuberculosis has not yet been widely supported in Bavaria. In addition the spread is attributed to hereditary factors associated with the spread of strains of cattle particularly susceptible to tuberculosis.

IV. *Post-mortem* protocols of 24 cows showing lesions of the sexual organs suspected of being tuberculous in origin are recorded. Twenty-one of these proved to be tuberculous, this number representing 10% of all cows slaughtered at the abattoir during the period under consideration. In four instances the ovary was involved, in three the fallopian tubes, in 22 the uterus, in one the cervix and in six the vagina. From the distribution of lesions it was concluded that ten cases were haematogenous in origin whilst, in the remainder, infection was by extension from the peritoneum. The ages of affected animals varied from one to ten years, the majority being six years old.—E. J. Pullinger.

I. Griffith, A. S. (1936). **Naturally Acquired Tuberculosis in Various Animals. Some Unusual Cases.**—*J. Hyg., Camb.* **36.** 156-168. 2 tables. [10 refs.]

II. Faustmann. (1936). Ein Fall von Tuberkulose bei einem Truppenpferd. [**Tuberculosis in an Army Horse**].—*Z. Veterinärk.* **48.** 337-350. [17 refs.]

III. Volkert, K. (1936). Fütterungsversuche mit tuberkulösen Rinderorganen an Hühnern. [**Effect of Feeding Bovine Tuberculous Organs to Fowls**].—*Inaug. Diss., Giessen.* pp. 28. 5 tables.

IV. —. (1936). **The Incidence of Tuberculosis in Animals [in F.M.S.]**—*Rep. Inst. med. Res. F.M.S. 1935.* p. 61.

I. The following cases of tuberculosis are described :–

Common name.	Site of lesions.	Infecting strain.	Remarks.
Bear.	Lungs and mesenteric glands.	Bovine.	
Bison.	Generalized.	Bovine.	Contact with cattle.
Hedgehog.	Lungs.	Bovine.	Probably escaped pet.
Indian fruit bat.	Peritoneum.	Bovine.	
Kangaroo.	Pancreas.	Avian.	Three other cases of avian and one of bovine infection in marsupials on record.
Mink.	Lungs.	Bovine.	
Goat.	Alimentary tract.	Avian.	Contact with fowls. Danger of tuberculous mastitis due to bovine type is stressed.
Horse.	Spleen, liver, lungs.	Human.	Virulence subnormal.
Calf.	Lungs.	Human.	Infection from phthisical attendant.
Parrot.	Skin.	Human.	Spread of infection to cervical gland.

II. Report of clinical and pathological findings in a case of equine tuberculosis. Infection proved to be very advanced and lesions included generalized tuberculosis of the serous membranes, lungs, spleen and the associated lymph nodes. The article is unsuitable for abstraction, but is strongly recommended to those interested in the clinical diagnosis of equine tuberculosis. It is noteworthy that in Germany from 0·05 to 0·4% of horses killed at abattoirs prove to be tuberculous.

III. The possible role played by fowls in the spread of bovine tuberculosis has been studied. Following the feeding of tuberculous beef to fowls, it was possible to isolate tubercle bacilli from the intestinal content. Moreover, these organisms could also be isolated from the birds' faeces for at least 24 hours after feeding. Tubercle bacilli in contaminated faeces remained virulent for at least 14 days when stored in diffuse light, and survived the influence of direct sunlight shining for 12 hours altogether during the course of five days.

These results indicate that if birds have access to such tuberculous material [*e.g.* wild birds feeding in badly controlled abattoirs or poultry fed on unsterilized meat meal], they may become a vital factor in the spread of infection about the farm. Apart from their presence in the intestinal tract, bovine tubercle bacilli

were isolated from tissues of only one out of six fowls fed on contaminated material. In this case a few organisms had apparently been carried to the liver, where they survived without setting up any visible changes.

IV. Out of five cases of suspected tuberculosis in carcasses of pigs encountered in different abattoirs in the Federated Malay States, only one proved on laboratory examination to be infected with tubercle bacilli. This organism was highly pathogenic for g. pigs but non-pathogenic for rabbits or birds and was, in consequence, classified as the human type.—E. J. PULLINGER.

I. HOLTH, H., & AMUNDSEN, H. (1936). Fortsatte undersøkelser over bacilltypene ved tuberkulose hos svinet på Østlandet. [**The Types of Tubercle Bacilli in Tuberculosis of Swine in Eastern Norway**].—*Norsk VetTidsskr.* **48.** 2-17. 11 tables. [English and German summaries].

II. BRANDT, A. J. (1936). Fortsatte undersøkelser over kulturell type-differentiering av tuberkelbakterier. [**The Typing of Tubercle Bacilli by Culture**]. —*Ibid.* 18-21. 1 table.

I. This article deals with recent investigations undertaken by H., in order to determine the types of tubercle bacilli in tuberculosis in swine [*V. B.* **5.** 684]. In this part of the work also, the material investigated was apparently tuberculous lymph-nodes, chiefly cervical, found at routine meat inspection of pigs from eastern Norway. Lymph-nodes from 162 pigs were examined and in 103 cases tubercle bacilli were detected. In 97 of these the type of bacillus was determined by the rabbit-g. pig method and 80 proved to be of the avian, 16 of the human and one of the bovine type.

In 59 cases tubercle bacilli were not demonstrated, but in 38 of these cases acid-fast coccobacilli were found. More detailed accounts of the latter are given.

II. Working with the same material as H., the author carried out further studies on typing the bacilli by culture. The results of this work confirm his earlier findings on this point [*V. B.* **5.** 786.], namely, that Petragnani's medium is excellent for the purpose of cultivating the bacillus and at the same time of determining the type directly from the mode of growth. This may be seen from the following figures which are compared with the findings of H. Of 150 samples examined, acid-fast bacilli were demonstrated in 90 cases by microscopic examination, 44 gave positive results by rabbit and g. pig inoculation, and 85 by the cultural method. As was the case in the earlier series of investigations, the types of bacillus determined by the three methods in this series closely agreed, except that one strain, which was found to belong to the avian type, behaved like the human type in culture in 15 successive generations.—GUSTAV NAERLAND (OSLO).

GOŁASZEWSKI, H. (1935). Problem dziedzicznosci gruzlicy. Badania nad przechodzeniem przez lozysko ziarnistej formy G. zarazka gruzliczego. [**Congenital Tuberculosis**].—*Przegl. wet.* **48.** 465-488. [Numerous refs.] [German summary].

Experiments were carried out to test whether Panek's G variety of tubercle bacilli in coccus form could pass through the foetal membranes. Pregnant g. pigs were inoculated with G variety suspension and parts of their newly born young were injected into healthy g. pigs. It was found that the bacilli passed through the foetal membranes, since in healthy g. pigs so inoculated tuberculous lesions developed and contained typical tubercle bacilli.—K. SZCZUDŁOWSKI (LWÓW).

I. BEERENS, J. (1936). Détermination expérimentale de lésions tuberculeuses intestinales chez le cobaye par inoculation de bacilles dans les ganglions

mésentériques ; inoculation de BCG dans les mêmes ganglions. [**Intestinal Tuberculosis after the Inoculation of Culture into Mesenteric Lymph Nodes of Guinea Pigs**].—*C. R. Soc. Biol. Paris.* **122.** 272-274. [10 refs.]

II. Domanski, M. A. (1936). Etude hématologique chez le lapin au cours de la tuberculose de type Yersin. [**Haematology of the Rabbit in Tuberculosis of the Yersin Type**].—*Ibid.* 385-388. 2 graphs. [3 refs.]

I. Inoculation of tubercle bacilli by the usual routes does not produce intestinal lesions in guinea pigs. When, however, laparotomy is performed and bovine or human organisms are inoculated into the iliocaecal lymph nodes, definite lesions are produced in the alimentary tract. They are most marked when the dose of culture is such that it does not cause rapid death of the animal. When g. pigs are inoculated in this way with BCG the lesions that result from administration *per os* of a dose of bacilli of the human type are less extensive than in unprotected g. pigs.

II. In the Yersin type of tuberculosis, in rabbits dying about 21 days after inoculation, an anaemia appears suddenly at some point between the 8th and 15th days. This anaemia coincides with a sharp rise in temperature, and is accompanied in the later stages by monocytosis, lymphocytosis and spleen hypertrophy. There are indications that death is due to some form of intoxication.—N. J. Scorgie.

Houthuis, M. J. J. (1936). Enkele gegevens omtrent de frequentie van paratuberculosegevallen bij slachtvee. [**Frequency of Johne's Disease in Abattoir Cattle**].—*Tijdschr. Diergeneesk.* **63.** 276-277.

The number of animals affected with Johne's disease at the abattoir was 787 (2·19%). Tuberculosis was found in 415 of the above animals. By order of the Chief Veterinary Inspector all cases of Johne's disease in Holland must be reported in future. The diagnosis must be made by histological examination.

The total number of cattle slaughtered at the Rotterdam abattoir during 1935 was 35,908.

Babudieri, B. (1936). Caratteri biologici e osservazioni anatomopatologiche e sperimentali, su un nuovo germe acido-resistente. [**Description of a New Acid-Fast Bacillus**].—*Boll. Ist. sieroter. Milano.* **15.** 291-310. 12 figs. on 2 plates. [162 refs.] [German summary]. [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 862. Signed G. S. Wilson].

After a review of the group of acid-fast bacilli, the author describes a new member, A.R.B., which he isolated from rags (stracci). Culturally, it grows rather slowly and poorly and requires much the same type of medium as the mammalian tubercle bacillus. On egg medium its growth is whitish, not pigmented. The reactions it sets up on intraperitoneal or intracardial inoculation into laboratory animals are described at length, but it seems doubtful whether these are sufficiently characteristic to distinguish it from other saprophytic acid-fast bacilli.

Alexander-Jackson, Eleanor. (1936). **Studies on the Dissociation of Tubercle Bacilli with Special Reference to the Avian and Human Types.**—*Amer. Rev. Tuberc.* **33.** 767-799. 2 plates, 11 tables, 3 graphs. [47 refs.] [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 862. Signed S. Roodhouse Gloyne].

This article gives a detailed account of attempts made by the author to dissociate cultures of human and avian strain to true S colonies and in addition to devise a medium which would favour the continued subculturing of S colonies. The Bordet-Gengou medium proved to be valuable for this work.

After many experiments in adding various substances to this medium, it was

found that the addition of ferric chloride, 0·0004 per cent. favoured the formation of S colonies of human type in pure culture, and three strains of human tubercle bacilli were completely dissociated from R-S strains. Experiments to dissociate avian and human tubercle bacilli by animal passage showed that the lesions produced by both avian and human R bacilli tended to be limited, calcified and macroscopic and to contain few bacilli, whilst the lesions of S organisms were more diffuse, inflammatory, small or microscopic and contained relatively more bacilli. S tubercle bacilli tended to cause more symptoms of illness and emaciation and were somewhat more virulent than R bacilli of the same strain. Attempts were next made to see if sera obtained from tuberculous and non-tuberculous persons would assist in dissociation. These sera were added to the glycerine-potato agar used as a base for the Bordet-Gengou medium and cultures seeded thereon. Of 13 sera from tuberculous patients used in this way, one was found capable of dissociating two strains of human tubercle bacillus from R-S in one generation. The ability of a tuberculous serum to fix complement did not appear to bear any relation to this dissociating power. Experiments made with the sera of two immunized rabbits failed to disclose any abilities to produce dissociation. The author suggests a catalyst mechanism as a possible mechanism underlying the dissociation phenomenon.

I. Anderson, R. J., Crowder, J. A., Newman, M. S., & Stodola, F. H. (1936). **The Chemistry of the Lipids of Tubercle Bacilli. XLIII. The Composition of Leprosin.**—*J. biol. Chem.* **113.** 637-647. 1 table. [4 refs.]

II. Crowder, J. A., Stodola, F. H., Pangborn, M. C., & Anderson, R. J. (1936). **The Chemistry of the Lipids of Tubercle Bacilli. XLIV. Comparative Study of the Lipids of the Human Tubercle Bacillus.**—*J. Amer. chem. Soc.* **58.** 636-642. 4 tables. [Numerous refs.]

III. Crowder, J. A., Stodola, F. H., & Anderson, R. J. (1936). **The Chemistry of the Lipids of Tubercle Bacilli. XLV. Isolation of α and β Leprosol.**—*J. biol. Chem.* **114.** 431-439.

IV. Stodola, F. H., & Anderson, R. J. (1936). **The Chemistry of the Lipids of Tubercle Bacilli. XLVI. Phthiocerol, A New Alcohol from the Wax of the Human Tubercle Bacillus.** *Ibid.* 467-472. [7 refs.]

I. This paper deals with the chemical composition of leprosin, a neutral wax-like substance isolated from the leprosy bacillus. It was found to consist of a complex mixture of glycerides and waxes. A new fatty acid called leprosinic acid was isolated, as well as two of the higher secondary alcohols.

II. This investigation was pursued in order to ascertain whether recently isolated bacilli, when grown in Long's synthetic medium, would produce lipoids possessing chemical and biological properties identical with one which had been cultivated for many years on artificial media. Four different cultures of bacilli recently isolated from human cases of tuberculosis were studied and compared with strain H37, used in previous investigations. Great variations in yield of the different lipoid fractions, as well as their chemical properties, were found. One of the main differences was that the pigment – phthiocol – occurred in the acetone soluble fat in both the free and combined state. Small traces of sterol-like substances, however, detected in the acetone-soluble fat, were in such small quantities as to be regarded as impurities and not as metabolic products of the bacilli.

III. This is an account of a more detailed analysis of the secondary alcohols mentioned above. They have been designated as α and β leprosols and found to possess phenolic properties. The composition and reactions of the leprosols

would indicate that they contained a benzene nucleus and that the hydroxyl and the methoxyl groups are in the ring, but neither the number, nature nor the position of the side-chains are known.

IV. The α and β leprosols described in III were found also in the unsaponifiable matter of the timothy bacillus and the avian tubercle bacillus, but after prolonged analysis could not be detected in the wax fractions derived from the human tubercle bacillus. Another new alcohol, however, which differs entirely in composition and properties from the alcohols referred to above, was found and designated phthiocerol. A few of its chemical properties are described but its physiological properties have not yet been determined.—James Stewart.

Hupbauer, A. (1936). Upliv ishrane na experimentalni vrbanac svinja. [**Influence of Nutrition on Experimental Swine Erysipelas**].—*Jugoslov. vet. Glasn.* **16.** 212-215. 2 tables. [15 refs.] [German summary].

The composition of the food is of great importance with regard to the resistance of pigs to experimental infection with virulent cultures of *Erysipelothrix rhusiopathiae*. In tests carried out, pigs given fodder rich in protein, Ca and P resisted experimental infection. Pigs given a diet rich in protein and P and deficient in Ca and vitamin D, as well as those kept on a diet rich in P and deficient in protein and Ca, all contracted the disease, and 28% out of each group succumbed. H. therefore concludes that it is not lack of protein, but deficiency in Ca and vitamin D, which is responsible for the lowered resistance of pigs to swine erysipelas.
—B. Oswald (Skoplje).

Mallari, M. V., & Mallari, A. I. (1935). **Human Glanders in the Philippines ; an Additional Report.**—*J. P. I. med. Ass.* **15.** 616-618. [5 refs.]

This is an account of glanders in a Filipino, being the 12th case of glanders in man to be recorded in the Philippine Islands since 1904. Infection was ascribed to contact with a glandered horse owned by the affected man. Diagnosis was confirmed at the veterinary research laboratory by the usual inoculation and cultural methods.—C. Davenport.

I. Heck, J. H. (1935). Vaccinatie van buffels tegen septichaemia epizoötica in een gedeelte van de onderafdeeling Bone, afdeeling Bone, gewest Celebes en Onderhoorigheden, in het tweede halfjaar 1934. [**Vaccination against Haemorrhagic Septicaemia in Buffaloes in the Bone District, West Celebes, July-December, 1934**].—*Ned.-ind. Bl. Diergeneesk.* **47.** 320-326.

II. Heck, J. H. (1936). Vaccinatie tegen septichaemia epizootica in een gedeelte van de onderafdeeling Makale-Rantepao, afdeeling Loowoe, gewest Celebes en Onderhoorigheden, in het eerste halfjaar 1935 (5de vaccinatie). [**Vaccination against Haem. Septicaemia (in Buffaloes, Pigs and Cattle) in Makale-Rantepao, West Celebes, January-June, 1935**].—*Ibid.* **48.** 90-97. 1 table.

I. Out of 16,364 buffaloes and 138 cattle vaccinated against haem. septicaemia, only two died within six months. The natural mortality in the same district was 229 out of 57,000 buffaloes.

II. Out of 16,489 buffaloes, 14,087 pigs and 156 cattle vaccinated, only two buffaloes became affected with H.S., whilst out of 27,000 buffaloes and 100,000 pigs not vaccinated, 83 buffaloes and 90 pigs died of H.S. in the same period.—J. E.

Topacio, T. (1935). **A Fowl Cholera Vaccine.**—*Philipp. J. anim. Indust.* **2.** 369-373. 3 tables. [3 refs.]

Agar surface cultures of *Past. aviseptica* were washed off into broth and

incubated for four to seven days. The cultures were then treated with NaOH to " separate the envelopes from the organisms ", neutralized with HCl and treated with 0·5% phenol. This procedure was varied somewhat and different concentrations [not specified] of NaOH were used. Some of the batches of vaccine immunized fowls against artificial infection. [Only a small number of birds was used and some of the controls survived].—J. E.

I. Manninger, R. (1936). Neuere Erfahrungen über die Geflügelcholera. [**New Knowledge of Fowl Cholera**].—*Dtsch. tierärztl. Wschr.* **44.** 523-526.

II. Morcos, Z., & Hosny Mahmoud, A. (1936). **Fowl Cholera. Pasteurella aviseptica : Behaviour and Immunization. Comparison with P. suiseptica.** —*Vet. J.* **92.** 336-339. [12 refs.]

I. It has been found that carrier birds are comparatively common in flocks apparently free from fowl cholera. Outbreaks of the disease seem to occur in flocks where there is no possibility of introduction from outside sources, and are attributable to predisposing factors such as cold, fatigue, bad systems of management, and worms causing lowered resistance of the birds. In properly managed flocks and in districts where the hygienic rearing of poultry is practised, fowl cholera rarely occurs or, if it does, only in the mild form known as " wattle disease ".

The necessity is emphasized for proper hygiene for the prevention of outbreaks. M. is of the opinion that passive immunization helps to reduce the severity of an outbreak. He utters a warning against the use of live vaccines, since they merely lead to the persistence of infection in a flock.

II. The authors report that vaccines prepared from unheated broth cultures of *P. aviseptica* preserved with formol or phenol are valuable immunizing agents. Heat-killed cultures give no protection. The authors consider that *Pasteurella aviseptica* can be distinguished from *P. suiseptica* by the fact that the former is highly pathogenic to fowls and practically non-virulent for g. pigs, whilst the latter is non-pathogenic for fowls but virulent for g. pigs.—N. J. Scorgie.

de Blieck, L. (1936). **Vaccination against Salmonella Infection.**—*Vet. Rec.* **48.** 971-974.

The literature dealing with the classification of the salmonella group is reviewed, and de B. points out that a knowledge of antigenic structure is essential for the preparation of vaccines. All the available evidence appears to show that the subcut. method of vaccination gives the best results.

In collaboration with Jansen [see also *V. B.* **6.** 639.] de B. found that apparently excellent results were obtained in the immunization of silver foxes against infection with *S. enteritidis* var. *Dublin* by the use of formolized broth culture. At Utrecht University it has been found that vaccination against salmonella infection in birds is not a practicable procedure. In horses, calves and pigs, a few experiments on a small scale carried out by de B. and others indicated a slight possibility that vaccination might contribute to the control of salmonella infections in these animals.—N. J. Scorgie.

I. Bernard, H. (1935). Ein neuer Bakterientyp aus der Paratyphus-Enteritis-Gruppe als Erreger des Verkalbens in einem Rinderbestande. [**A New Salmonella as the Cause of Abortion in Cattle**].—*Z. Hyg. InfektKr.* **117.** 352-357. 2 tables. [8 refs.]

II. Miessner, H., & Schoop, G. (1936). Bekämpfung des seuchenhaften Verfohlens. [**Control of Contagious Abortion in Mares**].—*Dtsch. tierärztl. Wschr.* **44.** 262-264. 1 table. [1 ref.]

III. Topacio, T. (1935). **Spontaneous Salmonellosis of Swine.**—*Philipp. J. anim. Indust.* **2.** 393-394.

I. Strains of salmonella were isolated from the internal organs and lymph nodes of two cows at an abattoir and also from the faeces of a living animal. All three cows had previously aborted. The strains were not typed by detailed mirror agglutinin absorption tests. By direct agglutination and observation of the type of deposit (*i.e.* floccular or granular), using unabsorbed antisera, the organisms appeared to have one or more of the following " H " factors e, n, x, h, l, v, and one or more of the " O " factors IV, IX, XII. The author draws attention to the antigenic similarity of these strains to *Salmonella abortus equi* which has an antigenic formula IV (XII) e.n.x. Biochemical reactions which included the fermentation of glycerol and d-tartrate and failure to ferment rhamnose did not entirely confirm this similarity.

II. Successful control of *S. abortus equi* is dependent primarily upon accurate diagnosis. Diagnosis is based upon the result of serologic tests of mare's blood and, where possible, upon the cultivation of foetal material or uterine exudate. When the agglutination test is used a titre up to 1 : 300 [*i.e.*, the normal level of agglutinins] is considered negative, 1 : 500 to 1 : 750 is doubtful and 1 : 1,000 upwards positive. [Unfortunately the agglutinability of the antigen is not recorded, nor is any distinction drawn between the normal titres of " O " and " H " antibodies]. In addition to hygienic control measures, vaccination is attempted. Formolized vaccine, administered in successive doses of 1 and 3 c.c., is considered to be a useful prophylactic measure under field conditions. Inoculated horses show both a thermal and a local reaction to inoculation.

III. Five cases are recorded of pigs which died from a febrile condition. In each case an organism was isolated which was similar to *S. suipestifer*. Typing was not confirmed by serologic methods.—E. J. Pullinger.

Kachanov, G. A., & Edelstein, I. A. (1936). Kartina krovi pri formolvakcinacii teljat protiv paratifa. [**The Blood Picture in Calves after Formol Vaccination and, later, Infection with Paratyphoid Organisms**].—*Uchen. Zap. Vitebsk vet. zoo. Inst.* **3.** 49-60. 4 tables, 1 graph. [15 refs.] [German summary].

Five calves, 30 to 45 days old, were vaccinated (subcut.) twice at eight day intervals with a formolized culture of [unnamed] paratyphoid bacilli, and 14 days later were given three daily doses *per os* of a culture of *Salmonella enteritidis*. The blood picture was then studied : figures are given in tables.

The only marked change observed was an intense leucocytosis, which began soon after the vaccination and persisted during infection.

Greaves, R. E., Dearstyne, R. S., & Gauger, H. C. (1935). **Serological Studies on Adult Carriers of Pullorum Disease.**—*Tech. Bull. N.C. agric. Exp. Sta.* No. 48. pp. 16. 16 tables, 3 charts. [12 refs.]

This bulletin gives an analysis of bi-monthly agglutination tests of carrier hens for periods varying from two to six years. Only 24% of the 53 birds studied were consistently positive to the test and of these six were hens which were tested for six years, the remainder having shown intermittent reactions which decreased in frequency as the birds aged. The 283 negative phases determined in infected birds in the total of 3,060 tests were chiefly of short duration, *e.g.* only one negative result between two positive results, but a sequence of as many as 15 consecutive negative reactions was encountered between positive ones.

A bacteriological examination of eggs from carrier hens showed 13% to be infected. There was a gradual decrease of infected eggs as the birds aged.
—C. V. Watkins.

I. —. (1936). Bekjempelsen av den smittsomme kalvekastning. [**Control of Bovine Contagious Abortion in Norway in 1935**].—*Norsk VetTidsskr.* **48.** 53-58. 1 table, 1 chart.

II. Holth, H. (1936). Oversikt over de diagnostiske undersøkelser i anledning smittsom kastning foretatt ved Veterinaerinstitutet i 1935. [**Report of Diagnostic Work on Bovine Contagious Abortion in Norway in 1935**].—*Ibid.* 141-166. 3 tables. [2 refs.] [English and German summaries].

III. —. (1936). Rundskrivelse fra Veterinaerdirektøren til veterinaerene i anledning av bekjempelsen av den smittsomme kasting. [**Norway : Circular to Veterinary Surgeons on the Control of Bovine Contagious Abortion**].—*Ibid.* 195-197 and 231-233.

I. This communication from the Veterinary Office of the Ministry of Agriculture gives a brief survey of the first year's results of the new eradication scheme now operating in Norway. Of 6,207 herds tested in 1935, 2,278 were found to be infected. In the same year a total of 119,587 blood samples was examined, and in the 2,278 infected herds 10,500 positive reactors were detected, whereas 312 cases were doubtful. 8,655 reactors were slaughtered during the year, part compensation being made to the owners from government grants.

The general conclusion is that the work of eradication has made unexpected progress. 1,400 (62%) of the herds which were recognized to be infected in 1935, were freed from infection during the first year of the campaign.

II. A great burden was laid upon the Veterinary Institute at Oslo by the new regulations on contagious abortion which came into force on January 1st, 1935. Thus 131,752 bovine blood samples were examined, against 16,232 the previous year. The figures do not correspond exactly with those given by the Ministry of Agriculture (see above) as these also include a number of samples sent in privately. 10,058 (7·63%) gave positive, 299 (0·23%) doubtful and 121,395 (92·13%) negative reactions to the agglutination test. As several samples originated, at intervals, from the same cows, these figures do not show the actual number of infected cows. Further, blood samples from 25 horses were examined (six positive reactors), 15 sheep (all negative), 3 silver foxes (all negative) and five persons, of whom one, a cattle-owner, gave a positive reaction.

III. Experience gained during the first year of the campaign for the eradication of abortion in Norway has caused the Veterinary Director to draw the attention of veterinarians to certain regulations which are of paramount importance for further eradication work.

The Director emphasizes among other things the need for early notification of newly infected herds. Isolation and slaughter must follow as soon as possible after detection, and also satisfactory disinfection of the byre. The veterinary surgeon must take proper care that he is not spreading the infection himself. A herd must not be released before it has shown two successive negative tests carried out three and six months respectively after the removal of the last reactor. Finally, the importance of keeping a strict control over the livestock trade is emphasized.
—Gustav Naerland (Oslo).

Christenson, I. (1936). Brucellos-kampen i Estland. [**Control of Bovine Contagious Abortion in Estonia**].—*Svensk VetTidskr.* **41.** 157-162. [3 refs.]

On June 1st, 1934, the veterinary authorities in Estonia began an energetic

campaign. Every case of abortion must now, in accordance with the regulations, be reported immediately, and then a thorough serological and bacteriological examination must be effected. A herd is considered to be infected if there are agglutination reactions at 1 : 50 or over. Infected animals are marked on the left ear. Further, trade in living animals and intercommunication between infected and non-infected herds are governed by rigorous regulations. A herd is considered to be free of infection if two consecutive herd tests at an interval of 6 to 12 months are negative.—H. Berthelsen (Stockholm).

I. McEwen, A. D., & Roberts, R. S. (1936). **Bovine Contagious Abortion. The Use of Guinea-Pigs in Immunization Studies.**—*J. comp. Path.* **49.** 97-117. 7 tables. [7 refs.]

II. Ber, A. (1936). L'infection expérimentale des rats blancs par le bacille du Bang. [**The Experimental Infection of White Rats with** *Brucella abortus*]. —*C. R. Soc. Biol. Paris.* **122.** 845-846.

I. A series of experiments on the immunization of g. pigs with a living, non-virulent strain of *Br. abortus* is recorded. A high degree of resistance to subsequent infection with virulent culture is demonstrated in male g. pigs vaccinated with the non-virulent strain. In one experiment 90% of the vaccinated group resisted infection, whilst 100% infection occurred in the controls, although, in a minority of the experiments, the vaccinated group for some obscure reason showed a resistance little superior to that of the control group.

Pregnant female g. pigs were found to be highly susceptible to uterine infection with *Br. abortus*. Females vaccinated with the non-virulent strain before pregnancy and infected whilst pregnant were shown to possess a high degree of resistance to uterine infection, although organisms could be isolated from the spleen.

Vaccinated g. pigs were found to be still resistant to infection after a period of 19 weeks. As a result of the experiments carried out, McE. and R. are of the opinion that, since the non-virulent strain rarely persists in the body of inoculated g. pigs for more than three weeks, an immunity lasting for 19 weeks is not dependent upon the presence of organisms in the body.

Dead vaccines were found to confer little or no resistance to infection.

II. B. reports the susceptibility of rats to infection with *Br. abortus*, death occurring in the majority of cases three to five days after inoculation. The bacteriological and *post-mortem* findings are described. Infection could be conveyed by contact from infected to healthy rats.—N. J. Scorgie.

I. Freund, E. (1935). Untersuchungen über die Verbreitung der Bang-Infektion bei Pferden. [**Brucellosis in Horses**].—*Inaug. Diss., Hanover.* pp. 48. 3 tables. [Numerous refs.]

II. Saxer, E. (1935). Ueber Banginfektion als Ursache von Wirbelnekrose beim Schwein. [*Br. abortus* **as Cause of Vertebral Necrosis in Swine**].—*Münch. tierärztl. Wschr.* **87.** 289-294. 4 figs., 1 table. [Numerous refs.]

III. Zeller, H., & Stockmayer, W. (1936). Beitrag zur Brucella-Infektion der Kälber. [**Brucellosis in Calves**].—*Berl. tierärztl. Wschr.* **52.** 149-151. 1 table. [3 refs.]

IV. Karkadinovsky, J. A. (1936). Sur la brucellose des rats gris sauvages. [**Brucellosis in Wild Grey Rats**]. —*C. R. Soc. Biol. Paris.* **121.** 1611-1613. 1 table.

I. 199 horses were examined as follows : total leucocyte count ; erythrocyte count ; estimation of haemoglobin content of the blood ; degree of erythrocyte sedimentation ; Fulton's corrosive sublimate test for infectious anaemia, and

agglutination for *Br. abortus*. It is concluded that 100 of these animals were suffering from infectious anaemia. Sera from 20 horses agglutinated *Br. abortus* at a titre of 1 : 20, 20 agglutinated at 1 : 40, 7 at 1 : 80, 2 at 1 : 160 and 1 at 1 : 640. [No record of the density or agglutinability of the antigen is recorded. Assuming that antigen fairly similar to the Agricultural Research Council's antigen was used, the above findings approximate to those given by PRIESTLEY for English horses – *V. B.* **5.** 193. Throughout the publication the author referred to *Corynebact. abortus* Bang. This is a misnomer as *Br. abortus* is clearly the organism referred to].

II. Cases of spondylitis were encountered in pigs, particularly in pregnant sows. The macroscopic appearance of the affected vertebrae is described but the histology is not mentioned. The lesions were a primary necrosis followed by some degree of reparation with formation of a porous type of bone, causing distortion of shape and size. The cartilage was also affected. *Br. abortus* was isolated from these lesions. A serological test of the herd showed that over 50 per cent. of the animals were infected with this organism.

III. A study of brucella antibodies in calves born of dams infected with brucellosis. 21 calves showed positive serological reactions when one month old. During the second month these antibodies disappeared from the blood of one calf, by the third month from 2 more, by the fourth from 2 more, by the fifth from 4 more, by the sixth from 2 more, by the seventh from 3 more, by the eighth from 3 more and by the ninth from one more. The remaining calves were excluded from the experiment. Half the dams had excreted brucella in their milk during the first month after parturition, the organisms excreted varying up to 26 million per c.c. [it is not clear whether total or per c.c. ; there is insufficient technical detail]. The number of cows excreting organisms and the number of organisms excreted by individual cows decreased during the ensuing months. The high antibody content of new-born calves protected them from massive doses of *Br. abortus* in the milk. [The experiment was not designed to reveal the extent to which these antibodies were derived from the mother *via* the placenta or *via* the colostrum].

IV. Of 34 wild grey rats 3 showed positive agglutination reactions to *Br. abortus* at titres of 1 : 25, 1 : 80 and 1 : 200 respectively. Brucella were isolated from all 3 and also from 5 others which gave negative serological reactions and from 3 carcasses. Infected rats were collected from two different districts. [The importance of rats and other rodents as carriers and reservoirs of infection is obvious, and it is highly desirable that these findings should be confirmed on a larger scale].

—E. J. PULLINGER.

CUMMINGS, G. D. (1936). **An Evaluation of Huddleson's Dye Bacteriostatis and Hydrogen Sulphide Methods for the Identification of Brucella.**—*Amer. J. publ. Hlth.* **26.** 822.

This is a short report in which the author states that excellent agreement between different laboratories is obtained by the use of Huddleson's method [*V. B.* **3.** 124 and **4.** 494.] for the differentiation of members of the brucella group. It is recommended that thionin and basic fuchsin be used as the basis for classification, the hydrogen sulphide test being of secondary importance.—N. J. SCORGIE.

HERRMANN, O., KORJUKIN, E., & SPIRIDONOW, N. (1936). Identität der sogenannten Brucella-typen. [**The Identity of the So-Called Types of Brucella**].—*Z. ImmunForsch.* **87.** 372-388. [56 refs.] [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 659-660. Signed G. S. WILSON].

As the result of passage through rabbits, guineapigs, or mice, the authors claim to have altered the ability of certain Brucella strains to produce H_2S. One

strain of *Br. melitensis* and one of *Br. abortus*, neither of which produced H_2S, were both rendered positive by animal passage. A strain of *Br. suis* that did not produce H_2S till the fourth day of incubation was found, after animal passage to produce it on the first day. The other characteristics – CO_2-sensitivity and growth in the presence of dyes – were found to be even more readily influenced by animal passage than H_2S production. It is concluded that there is only one species of Brucella, and that this undergoes alteration in the body of different animal hosts. [These findings should be accepted with some reserve. Attempts of other workers to alter the characteristics of Brucella strains by animal passage have not been successful.]

Eyre, J. (1936). **Undulant Fever. A Retrospect.**—*J. State Med.* **44.** 64-88. 14 figs.

In a Hunterian Oration, the author traces the development of knowledge of the disease.—C. V. Watkins.

De Assis, A. (1936). Sôbre um caso de brucelose crônica humana com localização brucelar dentária. [**Human Brucellosis with Localization in a Tooth**].—*Hosp., Rio de J.* **8.** 677-686. 4 figs. [10 refs.] [English summary]. [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 774. Signed H. H. S.]

A woman of 41 years suffered from vague symptoms of a neurasthenic character. Physical signs were few, except for bad teeth generally, with focal infections – a premolar in particular. This was extracted and sent to the laboratory for examination. Among streptococci and staphylococci there grew colonies of an organism proved by cultural and biochemical tests to be *Br. melitensis*, with special action on dextrose media. Several blood cultures were tried up to three months but remained sterile, though the patient's serum agglutinated *Br. melitensis* in a dilution of 1 in 400. There was marked leucopenia, 3,200 per cmm., with relative lymphocytosis, 43 per cent. The source of infection was not traced, but the patient used to stay from time to time on a farm, though, so far as she knew, she had no definite contact with infected animals. [There is no record of examination of milk or milk-products at this farm].

I. Glättli, H. (1936). Ueber den Geburtsrauschbrand und andere Gasoedeme sowie deren Behandlung. [**Parturient Blackleg and Gas Oedema and their Treatment**].—*Schweiz. Arch. Tierheilk.* **78.** 54-63. 3 tables. [10 refs.]

II. Huber, F. L., & Kraneveld, F. C. (1936). Experimentelle Studien zum Immunitätsverhältnis zwischen Rauschbrand und Pararauschbrand. [**Immunological Relationship between Blackleg and Para-Blackleg**].—*Hand. ned. ind. natuurw. Congr.* pp. 733-737. 1 table.

I. A note on the occurrence and treatment of parturient clostridium infections. These cases were encountered in cattle of all ages and at all times of the year. The majority of cases (18 out of 31) occurred less than two days after parturition. The distribution of lesions is discussed and it is emphasized that in only half of the cases were obvious lesions of gas oedema to be seen in the outer sexual organs. Treatment with specific antiserum (intrav. or subcut. injection) proved very satisfactory.

II. *Cl. chauvoei* antiserum protected g. pigs against injections of tissue emulsion contaminated with this organism, but serum from normal bovines had no significant protective value. Formolized vaccine and formolized or phenolized toxic filtrate of *Cl. chauvoei* produced a strong active immunity. [Cross-protection

experiments between *Cl. chauvoei* and *Cl. septique* and their respective antisera were unsatisfactory on account of the low pathogenicity of the strain of *Cl. septique* which was used. Although this strain killed the majority of normal control g. pigs, the bulk of those which received doses of normal bovine serum or anti-*chauvoei* serum survived the subsequent inoculation of *Cl. septique*].—E. J. Pullinger.

Breed, R. S., & St. John-Brooks, R. (1935). **Report on Proposals Submitted by R. E. Buchanan and H. J. Conn Relative to the Conservation of Bacillus as a Bacterial Generic Name, Fixing of the Type Species and of the Type or Standard Culture.**—*Zlb. Bakt. II.* **92.** 481-490. 1 table. [19 refs.] [In English].

The proposals of Buchanan and Conn are given in full: as a result, a questionnaire was sent to all members of the nomenclature committee of the International Society of Microbiology inviting opinions. A two-thirds majority declared in favour of their proposals and it was resolved to adopt *B. subtilis* Cohn, 1872 Marburg strain as the type species. Organisms which do not form endospores are excluded from the genus *Bacillus*.—J. E.

Mlynář, J. (1935). O účinku ultrifialových paprsků na životnost a virulenci některých mikrobů pathogenních pro vepře. [**Effect of Ultra-Violet Rays on the Viability and Virulence of Some Bacteria Pathogenic for Swine**].—*Biol. Spis. vys. Šk. Zvěrolék.* **14.** 47-83. [Numerous refs.] [German summary].

In this experimental study pathogenic strains of *Salmonella cholerae-suis*, *Erysipelothrix rhusiopathiae* and streptococci were used. The effect of ultra-violet rays on growth and on virulence was observed. The cultures, in liquid and from solid media, were exposed to the ultra-violet rays of a mercury vapour lamp for different periods. The effects were proportional to the exposure.

The exposure of cultures at a distance of 30 cm. from the lamp killed *S. cholerae-suis* in 3-4 minutes, streptococci in 5-7 minutes and *E. rhusiopathiae* in 7-9 minutes.—E. Přibyl (Brno).

Frei, W., & Froebel, O. (1935). Ueber den Einfluss der Infektion auf die Gewebsatmung. [**Influence of Bacterial Infection on Tissue Respiration**].—*Biochem. Z.* **278.** 1-10. 8 tables. [4 refs.]

Using live g. pigs, F. and F. tested the effect on tissue respiration after injection of (1) live bacteria and (2) bacterial filtrates, and also the action of such filtrates on isolated sections of liver and kidney in a Warburg apparatus. *Pasteurella aviseptica*, *Salmonella enteritidis*, *Clostridium septique* and *Cl. chauvoei* were used.

It was found that an increase in O_2 consumption was caused by each bacterium: this was more marked in the isolated tissue preparations than in the live animals. —J. E.

Nungester, W. J., Jourdonais, L. F., & Wolf, A. A. (1936). **The Effect of Mucin on Infections by Bacteria.**—*J. infect. Dis.* **59.** 11-21. 6 tables. [15 refs.]

When bacteria (numerous species), used for experimental infections of laboratory animals (intraperit., subcut. and intratrach. inoculation) were suspended in sterilized gastric mucin, the resultant infection was more severe than that caused by the same doses of the bacteria suspended in saline.

The effect was considered to be due to the power of mucin to inhibit phagocytosis.—J. E.

I. Eide, C. J. (1935). **The Pathogenicity and Genetics of Gibberella Saubinetii (Mont.) Sacc.**—*Tech. Bull. Minn. agric. Exp. Sta.* No. 106. pp. 67. 9 figs., 7 plates, 17 tables. [Numerous refs.]

II. Kambayashi, T., & Otake, S. (1936). Ueber die Tierpathogenität pflanzenpathogener Pilze, insbesondere von Fusarium solani (Mart. Pr.P.) App. et. Wr. [**Pathogenic Action of the Plant-Pathogenic Fungi including** *Fusarium solani*, **on Animals**].—*Z. Parasitenk.* **8.** 611-616. 3 figs., 4 tables. [1 ref.]

I. The organism mentioned is that which causes scabby barley, which is harmful to some domestic animals [see *V. B.* **6.** 859]. The veterinary aspect is not dealt with directly.

II. A study was made of the action of *Gibberella saubinetii*, *G. Fujikuroi*, *Fusarium bulbigenum* and *F. solani* on the sand-papered skin of g. pigs, and of that of the last two on the authors themselves. Three g. pigs were used for each fungus. Each organism caused erythema (24 hours) followed by crust formation (40 hours), crust desquamation (50-70 hours), followed by healing in one or more of the animals.

The changes in human skin due to *F. solani* lasted much longer – up to 14 days, during which a thin dark crust formed and spores were seen in the subcorneal layer of a piece of skin removed and examined microscopically. [No mention is made of the outcome of these cases].—J. E.

DISEASES CAUSED BY PROTOZOAN PARASITES.

Bennett, S. C. J. (1936). **Camel Trypanosomiasis Control.**—*Rep. vet. Serv. Sudan, 1935.* pp. 30-31.

It is already known that a single intravenous dose of 4 g. of " naganol " cures nearly all camels, and that a period of perhaps two months' immunity follows administration of this dose. The few camels not cured by a dose of 4 g. may require much larger doses, so that a slight increase in routine dosage is not warranted ; the fate of these few camels should depend on the amount of individual attention that can be spared for them. Owing to the danger of reinfection, however, it has been found desirable to raise the routine dosage slightly in order to produce a longer average refractory period. The routine dose is, therefore, now 5 g.

Johnson, C. M. (1936). **A Natural Infection of** *Trypanosoma hippicum* **Darling in the Vampire Bat** *Desmodus rotundus murinus* **Wagner.**—*Amer. J. trop. Med.* **16.** 59-62. [4 refs.]

Johnson, C. M. (1936). **Further Studies on the Transmission of** *Trypanosoma hippicum* **Darling by the Vampire Bat** *Desmodus rotundus murinus* **Wagner.**—*Ibid.* 163-173. 2 tables. [7 refs.]

These two articles record investigations undertaken with a view to assessing the importance of the vampire bat in the transmission of " murrina ", the equine trypanosomiasis of Panama. Out of 110 wild vampire bats examined, only one was found to be infected with *Tryp. hippicum*, and the author was unable to produce a trypanosome infection in pigs by feeding this bat on them. It is suggested that the low rate of infection thus found in wild bats may be due to the high mortality which the infection causes in them.

No cyclical development of *Tryp. hippicum* in artificially infected bats could be detected. Trypanosomes were found in the saliva of all artificially infected bats under experiment, but, except in three instances, they were always associated with blood corpuscles which were believed to be derived from bleeding due to injury of the buccal mucous membrane. The organisms found in saliva free from

blood were few in number, and appeared in a rounded-up condition, with poorly-staining structures. It is suggested that these were degenerative forms, and experiments seemed to show that the trypanosomes could not withstand the action of saliva for more than 30 minutes.

The author concludes that the vampire bat is not a true biological vector of *Tryp. hippicum*, but must be considered as a mechanical transmitter of the disease. He considers that the epidemic disease is probably transmitted by direct contact between infected and healthy horses when rounded up in corrals, principally as a wound infection (skin sores), and possibly through the medium of flies. Bats may be important factors in maintaining the disease over what the author speaks of as the " latent period ", as they may remain infected for as long as two months, and seven cases of recovery have been recorded. Bats may also be responsible for the transmission of the disease to horses from cattle which exhibit chronic infection and only scanty parasites in the peripheral blood.—U. F. Richardson.

I. Gaud, M. (1935). La leishmaniose viscérale au Maroc. [**Visceral Leishmaniasis in Morocco**].—*Bull. Off. int. Hyg. publ.* **27.** 533-535.

II. Jorge, R. (1935). La leishmaniose au Portugal. [**Leishmaniasis in Portugal**].—*Ibid.* 536-543. 2 figs. [7 refs.]

III. Poursines, Y., Soulie, P., & Scandarani, T. (1935). Enquête sur la leishmaniose canine à Beyrouth. [**Canine Leishmaniasis in Beirut**].—*J. Egypt. med. Ass.* **18.** 773-782. [In French].

IV. Lépine, P., & Bilfinger, F. (1936). Recherche de la leishmaniose viscérale chez les chiens de fourrière d'Athènes. [**Visceral Leishmaniasis in Pariah Dogs in Athens**].—*Bull. Soc. Path. exot.* **29.** 131-135. [5 refs.]

I. This article records that both human and canine leishmaniasis are very rare in Morocco. The disease was recorded in dogs in two towns in 1916, but in recent years has only been detected in three dogs and one fox. Two of the dogs exhibited no symptoms and they were only examined because of their contact with a case of infantile leishmaniasis at Fez.

II. This communication records the prevalence of infantile leishmaniasis in Portugal, and the existence of a 3·8% infection rate amongst the stray dogs of Lisbon. No correlation could be found between the prevalence of the human and canine disease. Attempts to transmit the parasites from dog to dog, or from man to dog, by fleas have been unsuccessful.

III. The authors record an investigation into the prevalence of canine leishmaniasis in Beirût. Dogs were examined by the formol-gel and mercuric chloride tests, and by microscopic examination. No infected animals could be detected amongst stray dogs destroyed at the abattoir, but three infected animals were found amongst animals from the European quarter, brought to the clinic for treatment. Two of these were dogs imported from France. Two animals recovered under treatment with "anthiomaline". The mercuric chloride test was found very useful in assessing the value of treatment. Attention is drawn to the absence of leishmaniasis both in the human population and in the native dogs in Beirût, and to the danger of the introduction of the disease by imported dogs.

IV. This article records an investigation into the prevalence of canine leishmaniasis in Athens. 500 observations were made on stray dogs destroyed at the abattoir, 11% being found infected.

For direct examination, the bone-marrow of the ribs proved superior to the spleen or liver, giving 50 positive results compared with 42 and 21 respectively. Culture of blood samples gave two positive results which were not revealed by direct examination. The opacity reaction of the formol-gel test and the flocculation

reaction of Takata-Ara gave results agreeing closely with those obtained from direct examination, but yielded a small number of positive results not confirmed by microscopic examination. The formol-neostibamine reaction and the complement-fixation test both failed to detect a certain number of affected animals. —U. F. Richardson.

Legg, J. (1935). **The Occurrence of Bovine Babesiellosis in Northern Australia.** —*Pamphl. Coun. sci. industr. Res. Aust.* No. 56. pp. 48. 5 figs. on 4 plates, 36 tables, 9 charts. [Numerous refs.]

In his study of tick fever diseases of cattle in Queensland, the author has already reported the presence of *Babesia argentina*, *Anaplasma marginale*, *B. bigemina* and *Theileria mutans* [see *V. B.* **4.** 221 and 505, and **6.** 223]. This pamphlet fully reports his investigations with *B. argentina*.

One strain was obtained from ticks from Southern Queensland, one from an outbreak in cattle from Northern Queensland, and a third from sporadic cases at Townsville. After artificial infection with pure strains the incubation period is generally from seven to 18 days and the parasite usually appears in the blood during the temperature reaction. Jaundice and methaemoglobinuria may appear and in severe cases anaemia may be very marked. On *post-mortem* examination the principal lesion is great enlargement of the spleen and *Babesia* can usually be found in great numbers in smears from the kidneys. In splenectomized animals the disease is more severe and produces a much higher mortality. The morphology of the organism is described.

Cross-protection experiments showed that animals recovered from babesia infection were resistant to infection with strains of the same organism from other districts. Eighteen animals recovered from *B. argentina*, and then inoculated with *B. bigemina*, showed no resistance to the latter, but bovines infected with *B. bigemina* showed considerable resistance to later inoculation with *B. argentina*. Carriers of *B. argentina* had less tendency to relapse after splenectomy than carriers of the other protozoa.

Piro blue (1 g.), " ichthargan " (1 g.), " antimosan " (100 ml.), and todorit (10 ml.) had no effect on the disease but " trypaflavine " exerted a beneficial effect. Direct evidence was obtained that the naturally occurring disease is transmitted by *Boophilus microplus*.—W. I. B. Beveridge.

Yakimoff, W. L., & Mizkewitsch, W. J. (1936). Sur la question de la répartition géographique des piroplasmes des bovidés en Russie. [**Geographic Distribution of the Piroplasms of Cattle in Russia**].—*Ann. Soc. belge Méd. trop.* **16.** 161-162.

[In this abstract the authors' nomenclature is used. There is a lack of data which would enable a comparison with established species to be made].

Y. and M. give the distribution as follows :—*Babesia bigemina* and *Françaiella colchica* (North Caucasia, Transcaucasia, Crimea and Turkestan) ; *B. bovis* (the region of Leningrad and to the west, White Russia, Karelia and parts of the Ukraine) ; *Fr. caucasica* (North Caucasia and White Russia) ; *Fr. occidentalis* (White Russia).

They report the discovery of *Fr. caucasica* and *B. bigemina* in the blood of two cows sent from Voronesh. They doubt if *B. bigemina* is normally present in this district owing to the absence of the usual vectors, and suspect that it is only found in the blood of animals imported from infected areas.—R. Fisher.

Konstantinov, A. G. (1936). Dva slučaja placentarnogo zaraženja Nuttalia equi. [**Placental Infection by** *Babesia equi*].—*Sovyet. Vet.* No. 6. p. 83.

The author observed two cases of placental infection by *B. equi*. In one foetus nearly all the erythrocytes were infected, and in the other 3 to 8 in each microscopic field.

The parasites were for the most part small, round forms with sharply-defined chromatin and were present singly or in pairs. Sometimes there were three or four, but rarely more than five in an erythrocyte. The mares could not be examined simultaneously with the foetuses, and their later examination was not helpful as no piroplasms were found in smears of their blood.

Nowicki, R. (1935). Przyczynek do znajomosci rozmieszczenia cew mieschera w miesniach szkieletowych swin. [**Sarcosporidial Cysts in the Muscles of Swine**].—*Przegl. wet.* **49.** 285-298. [Numerous refs.] [German summary].

Of 7,562 swine slaughtered at the age of six to nine months, 37 per cent. were infested with *Sarcocystis miescheriana*, the muscles of the diaphragm, loins, abdomen, back, ventral part of the neck, thorax, tongue, oesophagus and heart being the chief locations. After feeding three dogs with flesh from infested swine, *S. miescheriana* were found in the muscles of two of them.

—K. Szczudłowski (Lwów).

I. Huguenin, B., & Bourgeois, E. (1936). Ueber Leptospirosis beim Hund. [**Leptospirosis in the Dog**].—*Dtsch. tierärztl. Wschr.* **44.** 483-485.

II. Uhlenhuth, P., & Zimmermann, E. (1936). Hunde als Träger der Spirochäten vom Weiltyphus. [**Dog Carriers of Weil's Spirochaete**].—*Dtsch. med. Wschr.* **62.** 891-893. 1 table. [11 refs.]

III. —. (1936). **Spirochaetal Jaundice in England.**—*Lancet.* **230.** 849.

I. The symptoms of spirochaetal jaundice are described briefly and the pathological changes in acute, subacute and chronic cases are detailed. Reference to the original is advised. Acute cases are characterized by a marked destruction of liver cells, high grade icterus, haemorrhagic gastro-enteritis and, sometimes, stomatitis. In subacute cases icterus may be absent but the endothelium, particularly of the lining of the left side of the heart, degenerates; this is followed by desquamation and a tendency to thrombus formation. The myocard shows diffuse haemorrhages, and infiltration. Chronic interstitial nephritis is a common sequel. Chronic cases show similar lesions which are older and may have undergone calcification or some form of regeneration. In addition to these distinct stages, cases may be encountered showing lesions of both acute and chronic types. Confirmation of the diagnosis offers difficulties. Direct examination under dark-field illumination does not always reveal the parasite; demonstration of the spirochaetes in sections following silver impregnation can only be effected after material has been treated for some months, because rapid fixation of such material proves unreliable in practice. Subcut. inoculation of g. pigs with tissue emulsion is followed by death about the third day. Mice are useless as test animals.

II. Sera from 88 sick dogs were subjected to the agglutination tests for *Sp. icterohaemorrhagiae* and *Sp. canicola*; 11 of these showed agglutinin titres varying from 1 : 160 to 1 : 5,000, for the original Weil strain, whilst eight showed titres for *Sp. canicola* which varied from 1 : 300 to 1 : 5,000. Four cases showed agglutinins for both strains. The dogs concerned were suffering from symptoms diagnosed variously as distemper, haemorrhagic gastritis, nephritis, Stuttgart disease, otitis, etc. [The above-mentioned incidence of 11 out of 88 should not be taken as representative for dogs as a whole, since all those tested were ill and

under veterinary care]. Dogs from three to six years old were chiefly affected and it is suggested that younger dogs have had less opportunity to become infected.

III. Spirochaetal jaundice of human beings only received adequate recognition in England in 1934 when FAIRLY drew attention to the high prevalence of the disease amongst sewer workers. The causal organism was identified by WENYON and BROWN as early as 1922. Cases have since been encountered not only in sewer workers, but also in coal miners and the disease is now recognized as an occupational one. Reference is made to the differential diagnosis from infectious jaundice, the two conditions being distinct in origin. No mention is made of infection in dogs.—E. J. PULLINGER.

I. VERGE, J. (1936). Les spirochaétoses aviaires. [**Avian Spirochaetosis**]. – *Rec. Méd. vét.* **112.** 257-270.

II. ZEITZER, Margarete. (1936). *Culex*, a **New Vector of** *Spirochaeta gallinarum*. —*J. trop. Med.* (*Hyg.*). **39.** 204.

I. This paper gives a general account of spirochaetosis in the fowl and goose and contains a reference to a broncho-spirochaetosis of poultry, and also to spirochaetosis in canaries as described by GRAY (1928).

After a description of infection in the fowl with *Sp. gallinarum* and in the goose with *Sp. anserina*, the author refers to the prevailing views concerning the identity or otherwise of these two organisms. Some maintain that they are identical; others claim that the morphological, biological and immunological differences justify the recognition of two distinct strains. MARCHOUX and SALIMBENI claim that the fowl disease is a hypervirulent form of the disease in geese. *Sp. anserina* does not kill poultry, but *Sp. gallinarum* is fatal for geese.

The paper does not contain any new matter.

II. The author demonstrated that *Culex* is a true vector of *Sp. gallinarum* and that it was responsible for transmission of the disease in an extensive outbreak in fowls in the area of the Baltic Sea.—GWILYM O. DAVIES.

DISEASES CAUSED BY VIRUSES.

I. —. (1936). **Other Virus Diseases.** *Quart. Bull. Hlth Org. L.o.N.* **5.** 190-191.

II. DU TOIT, P. J. (1936). **Virus Diseases of Animals Communicable to Man.** —*Ibid.* 191-197.

I. A brief note stating that, at the Pan-African Health Conference, Johannesburg, November, 1935, the following virus diseases common to animals and man were discussed: Rift Valley fever, influenza, psittacosis, "louping ill", equine encephalitis and B virus.

II. A review of recent literature.—J. E.

GILLAIN, J. (1936). Transmission naturelle de la fièvre aphteuse (virus africain) des bovidés à l'homme et de l'homme à l'homme. [**Natural Transmission of Foot and Mouth Disease (African Virus) from Cattle to Man, and from Man to Man**].—*Ann. Soc. belge Méd. trop.* **16.** 85-87. [3 refs.]

The author describes the benign characteristics of African types of F. and M. disease virus, especially those of an outbreak in the district to the north-east of Lake Kivu.

The unusual sequel of this latter outbreak was the infection of a two-year-old native boy by drinking raw cow's milk between breast feeding, and the transmission of the disease by the boy to his mother.—C. V. WATKINS.

I. Doukaloff, I. A. (1935). Infekcionnaja plevropnevmonija koz. [**Infectious Pleuro-Pneumonia of Goats**].—*Sovyet. Vet.* No. 9. pp. 55-61. [French summary].

II. Kiseleff, E. V. (1935). Izučenie virusa infekcionnoj plevropnevmonii koz i ego kultivirovanie. [**Cultivation of the Virus of Pleuro-Pneumonia of Goats**].—*Ibid.* 61-67. 2 tables, 6 graphs. [French summary].

III. Kiseleff, E. V. (1935). Vakcinacija pri plevropnevmonii koz. [**Vaccination against Pleuro-Pneumonia of Goats**].—*Ibid.* 67-68. 1 table.

I. An infectious pleuro-pneumonia of goats caused considerable loss on the collective farms in the U.S.S.R., mostly in the spring and autumn. In order to find out the cause the author carried out numerous artificial infection tests in healthy goats, using as infective material liver, lymph nodes, spleen, lungs, heart and kidneys. A small number of test goats were inoculated (either intratracheally or subcutaneously) partly with filtered, and partly with unfiltered test material. The disease was transmitted in some cases and the author concluded that the causal agent is a filtrable virus [the data given in support of this statement are incomplete]. Goats are also said to have contracted the disease on being placed in pens vacated one week previously by naturally infected animals. Treatment of the affected goats with " novarsenol " was valueless, but two goats first treated [intraven.] with " novarsenol ", and infected the following day did not become affected.

II. Attempts to cultivate the causal agent of inf. pl.-pneumonia of goats are recorded, and positive results were obtained in Martin's broth, a faint opalescence occurring within three or four days and increasing up to the 10th day of incubation. When injected into experimental animals the culture gave irregular results, some animals dying and others remaining well.

III. Attempts were made to make a vaccine, using for the purpose (a) oedematous fluid taken from the site of subcut. inoculation of experimentally infected goats, and (b) a broth culture. 87 goats, divided into eight groups were used, and all were inoculated subcut. at the end of the tail. Nearly all the young goats developed a febrile reaction and some died. The survivors were artificially infected three months after vaccination and all lived : three controls died.

Doubrava, O. (1935). Mor vepřů v zemi Moravskoslezské. [**Swine Fever in the Province of Moravia-Silesia**].—*Zvěrolék. Obz.* **28.** 295-300.

During the years 1932 to 1934 nearly all districts of Moravia-Silesia were infected. The infection was caused by the illegal smuggling of infected pigs from abroad and spread rapidly due to the sale of piglets in the markets. The most important sources of infection are pigs affected with the benign form of swine fever, as in this form the disease is often unrecognized.

The regulations involving proper disposal of dead animals, quarantine of infected premises and the cleaning and disinfection of cars, yards and barns, proved to be effective.

The author considers that, allowing for the cost of serum, which is high, a more economical system of control is to eliminate the infection by killing affected swine, and to compensate the owner.—E. Přibyl (Brno).

I. Debelič, Š. (1935). Meso svinja inficiranih svinjskom kugom i prenošenje svinjske kuge na zdrave svinje. [**The Meat of Pigs Infected with Swine Fever and the Spread of Swine Fever to Healthy Pigs**].—*Jugoslov. vet. Glasn.* **15.** 166-168. [5 refs.]

II. Butozan, V. (1936). Prilog krvnoj slici kod eksperimentalne svinjske kuge.

[**The Blood Picture in Experimental Swine Fever**].—*Vet. Arhiv.* **6.** 303-316. 4 tables. [5 refs.] [German summary].

III. Hupbauer, A., & Tomašec, I. (1936). Pokušaj vakcinacije svinja protiv kuge sa saponiziranim virusom. [**Immunization against Swine Fever with a Saponinized Vaccine**].—*Ibid.* 369-373. [8 refs.] [German summary].

I. The Yugoslavian meat inspection rules are discussed in the light of the results obtained by Birch, which show that the pickled as well as the chilled meat of pigs infected with swine fever is capable of spreading the disease to healthy pigs. Such meat can be rendered harmless either by boiling or by steaming. The Yugoslavian meat inspection rules are to be reformed in accordance with these findings.

II. The blood picture of four three-month-old pigs was studied, following experimental infection with swine fever caused by inoculations of 1 c.c. of virulent blood. In two pigs the disease supervened in an acute form, while in the other pair it took a chronic course. A considerable decrease of the erythrocyte count was observed in the chronic pair, and a decrease of the leucocyte count of both pairs. The variation in the average count of lymphocytes was in inverse ratio to that in the count of neutrophile leucocytes. The blood picture of the neutrophile leucocytes was found to be displaced leftwards (Schilling's formula). Vacuoles were detected in the plasma of both neutrophile leucocytes and lymphocytes. A blood picture of this kind should be regarded as denoting toxaemia.

III. An attempt was made at active immunization against swine fever with a saponinized vaccine prepared by Curasson's method, as follows:– a filtered suspension of the spleen, liver or bone-marrow obtained from pigs acutely affected with swine fever was mixed with either a 2% or a 4% solution of saponin in the proportions 1 : 1, or 1 : 2, and was inoculated subcutaneously into pigs in doses of 1 to 2 c.c. The results obtained were completely unsatisfactory. All the pigs tested contracted swine fever and the majority of them died.

—B. Oswald (Skoplje).

I. Domansky, F. (1936). Lze ze zánětlivých změn v centrálním nervovém systému vepřů rozpoznati nakazlivý charakter "Těsínské choroby"? [**Changes in the Central Nervous System in Encephalomyelitis Enzootica Suum**].—*Zvěrolék. Obz.* **29.** 83-86.

II. Scheuer, F. (1936). Příspěvek k zánětlivým změnám v centrálním nervovém systému u nakazlivé obrny vepřů. [**Changes in the Central Nervous System in Encephalomyelitis Enzootica Suum**].—*Ibid.* 187-188.

I. The most prominent histological changes found in the central nervous system in this disease are the perivascular lymphocytic infiltrations. As similar changes are sometimes found in animals affected with Borna disease, swine fever, swine influenza and dog distemper, the author made an experimental study, in the course of which he compared the histological changes of the brain and spinal cord in these various conditions. He believes that these lymphocytic infiltrations are more constant in encephalomyelitis enzootica suum than in the above diseases and suggests that this fact may be of value in differential diagnosis. This fact is very important in diagnosis.

II. Encephalomyelitis enzootica suum is similar in some respects to infantile paralysis (Heine-Medin disease). Calling attention to this fact, the author urges the necessity for systematic study of the connexion between these two infections, *i.e.*, of collecting the anamnestic data concerning the outbreaks of encephalomyelitis in pigs and in children.—E. Přibyl (Brno).

Troitskij, A. V. (1935). Epizootologičeskie momenti encefalomielita lošadej v stepnich uslovijach. [**Epidemiology of Equine Encephalomyelitis on the Russian Steppes**].—*Sovyet. Vet.* No. 5. pp. 33-36. [French summary].

The author describes how the disease was carried in 1931 to a farm on the steppes which was a fixed rendezvous and starting-point for the herds commencing their summer migrations in search of fresh pasture. This farm became a centre of infection. The author follows the spread of the disease on the steppes in 1932 to 1933, discussing the reasons for its earlier development (in 3-5 days after leaving the rendezvous) in some cases, and its later development (in 50-70 days) in others. He gives details of symptoms observed.

Moutovine, V. (1935). Dalnejšie opiti po izuceniju uctojcivosti virusa encefalomielita lošadej USSR po otnošeniju k fiziko-chimičeskim faktoram. [**Resistance of the Virus of Equine Encephalomyelitis to Physico-Chemical Factors**].—*Sovyet. Vet.* No. 12. pp. 29-32. 1 table. [French summary].

In tests of the action of caustic soda, carbolic acid, creolin and dry heat on the virus of eq. enceph., it was killed at a temperature of 50°C. for 20 to 30 minutes and in 3 to 5 minutes at 60°C.; suspension of infected brain was sterilized instantaneously at a temperature between 65° and 70°C. The virus was also killed by 0·5% caustic soda, 3 or 5% carbolic acid or 1% creolin. It resisted desiccation for five days or less.

I. Keller, F. (1936). Experimentelle und klinische Untersuchungen über Pferde-Anaemien. [**Experimental and Clinical Research on Equine Anaemia**].—*Inaug. Diss., Zurich.* pp. 79. 8 figs., 7 plates, 39 charts, 1 map. [Numerous refs.]

II. Balozet, L. (1936). Action de l'acide phénique sur la virulence de la rate dans l'anémie infectieuse. [**The Action of Phenol on the Virulence of the Spleen in Equine Infectious Anaemia**].—*C. R. Soc. Biol. Paris.* **122.** 285-286. [1 ref.]

III. Derrick, J. D. (1936). **Mercuric Chloride Test for Infectious Anemia.**—*Vet. Bull. U.S. Army.* **30.** 197-199. 1 chart.

IV. Hofferber, O. (1936). Ueber die Verbreitung der ansteckenden Blutarmut in Deutschland unter besonderer Berücksichtigung des Seuchenstandes in Preussen. [**Equine Infectious Anaemia in Prussia**].—*Berl. tierärztl. Wschr.* **52.** 156-158. 2 tables. [11 refs.]

V. Faure, L. (1936). Pyodermite et anémie infectieuse des équidés. [**Pyodermatitis and Infectious Anaemia in Horses**].—*Rev. Path. comp.* **36.** 919-921.

I. A study of anaemia in the horse, by a veterinary surgeon who has had many years' experience as a government veterinarian and as a practitioner. Readers should consult the original. Section A is confined to infectious anaemia and contains an interesting study of the epidemiology of this disease in Prussia from 1925 to 1934. Detailed observations following the artificial infection of seven equines are recorded. The findings are in general agreement with those of other workers. Section B consists of reports of clinical studies on anaemia associated with other diseases – strangles (12 cases), pneumonia (9 cases), purpura (2 cases), and unrecognized diseases (2 cases). Section C deals with anaemia in the absence of other disease. Section D deals with anaemia associated with convalescence from various diseases.

II. Virus of infectious anaemia was destroyed when infected spleen was emulsified with phenolized saline (1 : 1,000 of phenol), and stored for 16 days at 16° to 18°C. Destruction of virus was judged by its inability to produce either active infection or immunity when inoculated into susceptible donkeys.

III. The author does not consider that the mercuric chloride test (sublimate test of Fulton) is of value for the diagnosis of infectious anaemia as a positive reaction is by no means specific.

IV. The apparent incidence of infectious anaemia increased in Germany up to 1922, probably due to improved methods of diagnosis. From that time onwards, both in Germany as a whole and in Prussia, there has been little or no change in the incidence except for an initial fall between 1922 and 1923, when all obvious cases were eliminated. New and more efficient control measures are required.

V. Pyodermatitis is characterized by the appearance of multiple small abscesses on the limbs, croup and elsewhere, the distribution of the lesions showing no particular relationship to the cutaneous lymphatic system. The cause appears to be associated with a streptococcal or staphylococcal infection, but the aetiology is obscure. The condition responds readily to recognized surgical treatments. Infectious anaemia is also discussed.—E. J. PULLINGER.

HAMERSKI, E. (1935). Niedokrwistosc o charakterze zakaźnym u koni (na podstawie materjalu Kliniki z lat 1934-35). [**Equine Infectious Anaemia**].—*Rozprawy Biol.* **13.** 202-256. 10 tables, 6 charts. [Numerous refs.] [German summary].

The blood of two Arab horses suffering from E.I.A. was injected into five other horses. The artificially induced disease ran a mild course with rises of temperature, but without congestion or conjunctivitis. In two of the five horses blood to the extent of 2% of the body weight was withdrawn before infected blood was inoculated, but it had no influence either upon the incubation or upon the course of the disease. In addition two of the artificially infected horses were infected with paratyphoid bacteria, which provoked an intensive leucocytosis.

The sedimentation test may be used as an auxiliary means of diagnosis in the chronic form, but it often fails in the feverless stages and in the latent form of the disease.

Finally a case was observed of the chronic form in which the most marked lesions were found in the liver and the spleen; the R.B.C. sedimentation was delayed and the serum was opaque. In mild cases diagnosis is possible only on the basis of blood inoculation, rise of temperature and frequent blood examinations.
—K. SZCZUDŁOWSKI (Lwów).

I. —. (1936). Allemagne. Renseignements transmis par le Gouvernement du Reich sur l'état de la rage pendant l'année 1935. [**Rabies in Germany in 1935**].—*Bull. Off. internat. Epiz.* **12.** 482-484. 1 chart.

II. —. (1936). La rage en Tchécoslovaquie. Année 1935. [**Rabies in Czechoslovakia, 1935**].—*Ibid.* 485. 1 table.

III. —. (1936). La rage en Yougoslavie. Année 1935. [**Rabies in Yugoslavia, 1935**].—*Ibid.* 486. 1 table.

I. Rabid animals were found in 57 districts in Germany in 1935, all cases but one occurring in Prussia. A graph shows the monthly incidence in affected districts.

II. This consists entirely of a table showing that, in 87 districts, 251 dogs and 36 other infected animals were found. Of 262 persons and 66 animals bitten, only one person, one horse, one goat and five pigs became affected.

III. 629 dogs, 26 cats, 5 horses, 102 cattle, 7 sheep, 2 goats, 3 wolves and 69 pigs in 194 districts were found to be affected with rabies in Yugoslavia.
—J. E.

I. Nicolau, S., & Kopciowska, L. (1935). Essais de transformation du virus rabique fixe en virus des rues. [**The Transformation of Fixed Rabies Virus into Street Virus**].—*Ann. Inst. Pasteur.* Suppl. Oct. pp. 108-126. 4 figs., 2 tables. [Numerous refs.]

II. Levaditi, C., & Schoen, Rachel. (1936). Virus rabique et cellules néoplastiques. [**The Virus of Rabies and Neoplastic Cells**].—*C. R. Acad. Sci., Paris.* **202.** 702-704. 3 figs. [5 refs.]

III. Schoening, H. W. (1936). **Can the Health Officer safely utilize Prophylactic Immunization as the Sole Means to control Canine Rabies ?**—*Amer. J. publ. Hlth.* **26.** 265-267. [4 refs.]

I. The authors succeeded in changing the characteristics of a fixed rabies virus (passaged for six years through the brains of rabbits) into those of a street virus, by passage through peripheral nerves of rabbits. They repeated these findings with an old Pasteur strain of fixed virus. They suggest the probability that fixation of the virus is really an adaptation of it to particular tissues and that it is, at least partially if not totally, reversible.

II. The authors made grafts with a Pearce type of carcinoma upon the testicle and in the anterior chamber of the eye of rabbits, and later inoculated the rabbits intracerebrally or intracorneally with a street virus of rabies [strain Bucharest 11 which generally causes the formation of Negri bodies in neurone cells and in epithelial cells of the cornea of rabbits]. Typical and often large Negri bodies were found in the neoplastic cells even when the latter were in process of mitosis, particularly after the first passage of the tumour. Both eyes were simultaneously affected.

The route of the virus after inoculation of the cornea was by way of the corneal nerves to the cerebrum, where it developed and reached the other cornea by the inverse route. The tumour was then infected and gave rise to Negri bodies after repeated transplantation. In addition, some Negri bodies were found in intracerebral grafts, but metastases in other organs, except occasionally those of the testicle, did not contain any. All such metastatic tissue containing Negri bodies was, however, avirulent.

III. The author answers this question in the negative. He draws attention to the limitations of vaccination for canine rabies, the chief of which is that, even following the use of standardized killed vaccines which are compulsory in the U.S.A., paralytic symptoms, often transitory, have been noted and a few fatal terminations have resulted.—C. V. Watkins.

I. Jonnesco, D. (1936). Contribution à l'étude de l'immunité naturelle du chien contre la rage. [**Natural Immunity of the Dog to Rabies**].—*C. R. Soc. Biol. Paris.* **121.** 1203-1205. [2 refs.]

II. Remlinger, P., & Bailly, J. (1936). La congélation des moelles rabiques est-elle applicable à la pratique de la vaccination ? [**Value of Frozen Rabid Spinal Cords in Vaccination**].—*Ibid.* 1614-1616. [5 refs.]

I. The author has previously reported that 1 per cent. of dogs show natural immunity to rabies after intracerebral inoculation. He now shows that successive inoculations at different sites with (1) virus fixed for dogs, (2) virus fixed for rabbits, and (3) reinforced virus injected by the same route, increases the neutralizing power of dog's serum after each of the three inoculations and at the same time decreases the amount of cholesterine therein. Natural immunity appears to Jonnesco to be due to the neutralizing action of living tissue cells upon the virus, together with the effect of intracellular enzymes in certain leucocytes.

II. The authors have shown that the freezing of rabid brains conserves the

virus for upwards of 26 months. If stored at 6°C. in glycerin the conservation is yet more prolonged (900 days). LÉPINE has shown that very inferior conservation of virus occurs under similar conditions in spinal cord.

As many problems remain to be solved concerning the correct application of freezing (whether upon fresh or desiccated spinal cord, etc.) the authors are now undertaking research upon the modifications occurring in rabid brain and spinal cord during the freezing process.—C. V. WATKINS.

RASTEGAEVA, A. M. (1935). Biologičeskie svoistva virusa ožeški. [**Biological Properties of the Virus of Aujeszky's Disease**].—*Sovyet. Vet.* No. 10. pp. 39-43. 1 fig. [French summary].

The author compared the behaviour of the viruses of Aujeszky's disease and rabies in experimental animals. She discussed the period of incubation, the duration of illness, methods of infection, the location of the virus in the body of the host and laboratory animals susceptible to infection.

BABIĆ, I. (1936). Ovčje boginje. [**Sheep Pox**].—*Jugoslov. vet. Glasn.* **16.** 215-216. [3 refs.]

A short general description dealing with the losses caused by, and legislation relating to, the disease. Owing to its high incidence, sheep pox should be scheduled in the redhibitory animal diseases list in Yugoslavia.—B. OSWALD (SKOPLJE).

MATSUMURA, T. (1934). **On the Identity between the Virus of Contagious Epithelioma of Fowls and the Vaccine Virus. I. The Gallinization of the Vaccine Virus through Fowl-Passage.**—*9th Rep. Govt. Inst. vet. Res. Fusan, Japan.* pp. 30-39. 2 tables. [22 refs.] [In Japanese: abst. from English summary. Pt. 2, p. 4].

Four strains of "variola-vaccine virus," all highly virulent for human subjects, calves and rabbits, were passaged through fowls and the results showed that the vaccine virus is adapted to the body of the fowl, namely, becomes "gallinized" after three or four passages.

The vaccine virus is modified in its virulence for fowls at the second passage and produces typical lesions of contagious epithelioma at the third or fourth passage. Tests showed that the gallinized vaccine virus was immunologically distinct from the original variola-vaccine virus. Gallinization of the vaccine virus reduced its virulence for calves.—R. F. GORDON.

SCHUURMAN, C. J., & SCHUURMAN-TEN BOKKEL HUININK, A. M. (1936). Das Enteiweissen, Konzentrieren und Sichtbarmachen von Bakteriophagen. [**The Deproteinization, Concentration and Actual Observation of** *Bacteriophage*].—*Zlb. Bakt. I.* (*Orig.*). **136.** 264-269. 1 fig., 1 table. [14 refs.] [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 652. Signed J. C. CRUICKSHANK].

The authors describe a means of concentrating bacteriophage by filtration of a suspension through a collodion membrane reinforced by Chinese paper. Experiments showed that the most satisfactory results were obtained by soaking the paper in 3·5 per cent. acetic-collodion solution and coagulating it in 62 per cent. acetic acid. 20 c.c. of a phage filtrate with a titre of 10^{-9} were filtered and the membrane rinsed out with 2 c.c. of broth, the resulting suspension being found to have a titre of 10^{-10}. A coli-phage suspension when thus concentrated to 10^{-12} began to show a slight opalescence.

The findings of SCHLESINGER in regard to the observation of phage-particles under the dark ground, and their agglutination by specific antisera, were confirmed, details of the optical system being described.

PARASITES IN RELATION TO DISEASE (ARTHROPODS).

I. KRUPSKI, A., & OSTERWALDER, H. (1936). Ein Fall einer Dassellarvenmeningitis spinalis beim Rind. [**Spinal Meningitis in an Ox Caused by a Warble Fly Larva**].—*Schweiz. Arch. Tierheilk.* **78.** 18-20. 1 fig. [3 refs.]

II. JOHANSSON, S. (1936). Ett fall med symptom från centrala nervsystemet hos häst, orsakade av larv till nötstynget (Oestrus s. Hypoderma bovis). [**Invasion of the Brain of a Horse by a *Hypoderma bovis* Larva**].—*Svensk VetTidskr.* **7.** 288-292. 4 figs.

I. A 15-month-old bovine developed a poor appetite, together with a great disinclination to move but no actual paralysis. It was slaughtered and, on examination, tuberculosis of the lungs and liver and acute inflammation of the spinal meninges in the lumbar region were discovered. The latter was evidently caused by a *Hypoderma* larva which was found alive there.

II. An army horse developed progressive paraplegia and general apathy, as in " Dummkoller ". It was slaughtered and a *Hypoderma* larva was found in the mid-brain which it had badly damaged.—J. E.

PARASITES IN RELATION TO DISEASE (HELMINTHS).

I. BERNY, P., & SAINT-PRIX, M. (1935). La stéphanurose porcine en Guyane Française. [**Stephanurosis in Pigs in French Guinea**].—*Bull. Soc. Path. exot.* **28.** 828-829. [1 ref.]

II. ROUSSEAU, L. (1936). Stéphanurose porcine en Guyane française. [**Stephanurosis of Pigs in French Guinea**].—*Ibid.* **29.** 46-47.

I. *Stephanurus dentatus* is found in the perirenal fat in 40 to 60% of pigs killed in French Guinea, and in the liver in 10%. The parasite does not appear to affect the health of the animals adversely. The authors claim this to be the first record of the occurrence of *S. dentatus* in French Guinea.

II. Rousseau calls attention to his previous report of *S. dentatus* occurring in French Guinea and refers to his article [(1921). *Bull. Soc. Path. exot.* **14.** 219-222].—E. L. TAYLOR.

KRANEVELD, F. C. (1935). Stephanofilariosis. VII. Een door de Stephanofilaria dedoesi veroorzaakte ooraandoening bij buffels. [**Stephanofilariasis. VII. Cases in Buffaloes (Ear)**].—*Ned.-ind. Bl. Diergeneesk.* **47.** 310-316. 6 figs. on 3 plates. [3 refs.] [English and German summaries]. [See also *V. B.* **6.** 433].

The dermatitis of cattle diagnosed as skin filariasis, locally known as "cascado", which is found in cattle and in goats, was seen in water-buffaloes, especially in Soembawa and South Celebes. It appeared as a papillomatous dermatitis of the auricle. Both adults and embryos were isolated. M. J. J. HOUTHUIS (ROTTERDAM).

IMMUNITY.

I. Kritschewski, I. L., & Galanowa, N. W. (1935). Neue Wegen zum Studium der Immunität und Allergie bei Infektionskrankheiten. Mitteilung III. Vom Wesen der erworbenen Immunität. Die Beziehungen zwischen der erworbenen Immunität der Zellen und ihrem anaphylaktischen Zustand. [**The Nature of Acquired Immunity. III. Connexion between Cellular Immunity and Anaphylactic State**].—*Z. Hyg. InfektKr.* **117.** 263-278. 1 table, 13 charts. [6 refs.] [See also *V. B.* **5.** 697].

II. Kritschewski, I. L., & Galanowa, N. W. (1935). Untersuchungen über das Wesen der erworbenen Immunität. Mitteilung IV. Die erhohte Empfindlichkeit (Allergie) der Uterusmuskulatur bei Infektion mit B. abortus. [**The Nature of Acquired Immunity. IV. The Sensitivity of the Uterus Musculature to Infection with** *Brucella abortus*].—*Arch. wiss. prakt. Tierheilk.* **69.** 299-318. 14 figs., 2 tables. [4 refs.]

III. Galanowa, N. W. (1936). Untersuchungen über das Wesen der erworbenen Immunität. Mitteilung V. Entstehen und Erlöschen der Zellimmunität gegenüber Mikroorganismen. [**The Nature of Acquired Immunity. V. The Rise and Fall of Cell-Immunity against Micro-Organisms**].—*G. Batt. Immun.* **16.** 690-696. 4 figs., 2 tables. [4 refs.] [In German : English, French and Italian summaries].

I. K. and G. [*V. B.* **5.** 697.] found that the isolated virgin uterus of " clean " g. pigs contracts if the fluid in which it is suspended has *Brucella abortus* endotoxin added to it. It does not, however, react to a second dose. This is evidently because the cells acquire a specific immunity. If, however, sheep serum is given along with the initial dose of endotoxin, a second dose of the latter causes a reaction, *i.e.*, the cells do not become immunized by the first dose. K. and G. assume that the toxin and sheep serum molecules unite round the uterine cells, leaving the latter unaffected. Toxin alone unites with the cell contents but could be separated from them by sheep serum or histamine given later. Contraction unrelated to the immunological phenomena could be produced when ergot extract was added to the solution.

It follows from the above results that sheep serum and histamine can both break down the immunity of uterine muscle cells to *Br. abortus* endotoxin, but the authors believe that the mechanism of this action is not the same for both agents.

II. Similar experiments were made with the isolated uteri of g. pigs that had been infected with a single dose of living *Br. abortus* and were killed at various intervals.

The infection did not cause a cellular immunity ; on the contrary, it caused hypersensitivy of the uterus to endotoxin, which persisted during the remaining life of the uterus in the test apparatus. The application of histamine had no effect, neither had the endotoxin of typhoid bacteria ; the hypersensitivity was thus strictly specific.

The uteri of g. pigs which had been given two doses of living *Br. abortus* at an interval of 45 days did not respond at all to the specific endotoxin, *i.e.*, the uterine cells had become immune. This cellular immunity had no quantitative relation to the amount of humoral antibody in the animal's body. K. and G. consider that " the antibody-forming capacity " of the cells is distinct from their non-sensitivity (immunity) and from their allergic condition. This finding may have important practical effects on immunization against contagious abortion.

III. A strong cellular immunity to *Br. abortus* was produced in the uteri of virgin g. pigs by specific vaccination (three doses) ; it reached its height in 50 days and had disappeared eight days later.—J. E.

Bisanti, C. (1934). La "Brucellina Mirri" per la diagnosi allergica delle brucellosi. [**Allergic Diagnosis of Brucella Infection**].—*Clin. vet., Milano.* **57.** 795-799. 5 figs. on 2 plates, 3 tables.

The author describes a trial of Mirri's "brucellin" [*V. B.* **5.** 637.] on cattle. Tests were carried out on 3,954 animals, of which 609 gave positive reactions whilst 241 only were positive to the agglutination test. Observations on these animals indicate that the "brucellin" test was the more reliable.

It seems probable that this preparation will assist the diagnosis of persistant infection or of recovery in animals treated by dead cultures of brucella.

—J. Veglia (Turin).

I. Philipson, J. (1936). **The Reticulo-Endothelial Response to Immunization with Paratyphoid-Vaccine in Rabbits.**—*Acta path. microbiol. scand.* **13.** 314-328. 5 figs. [16 refs.] [In English].

II. Galanowa, N. W. (1936). Die Abhängigkeit des therapeutischen Effektes der Serumbehandlung von der Unversehrheit des Reticuloendothelialsystems. III Mitteilung. Zur Frage des Mechanismus derjenigen Function des Reticuloendothelialsystems, bei die Vollwertigkeit der Serumtherapie bedingt. [**The Dependence of the Therapeutic Results of Serum Treatment upon the Intactness of the Reticulo-Endothelial System. III. The Mechanisms of the R.E.S. in Serum Therapy**].—*G. Batt. Immun.* **16.** 207-212. [2 refs.] [In German: English, French and Italian summaries].

III. Tschumakow, M. P. (1936). Die Abhängigkeit des therapeutischen Effekts bei der Serumbehandlung von der Intaktheit des Retikuloendothelialsystems. IV. Die Bedeutung des Retikuloendothelialsystems bei der Serotherapie des Gasoedems. [**The Dependence of the Therapeutic Results of Serum Treatment upon the Intactness of the Reticulo-Endothelial System. IV. The Significance of the Reticulo-Endothelial System in the Serotherapy of Gasoedema**].—*Ibid.* 681-684. 1 table. [3 refs.] [In German: English, French and Italian summaries].

IV. Rubinstein, P. L. (1936). Ueber die Bedeutung des reticuloendothelialen Apparates bei Infectionskrankheiten. Mitteilung XIII. Das Reticuloendothelialsystem als Schutzapparat bei der Meningokokkeninfection. [**The Significance of the Reticulo-Endothelial System in Infectious Diseases. XIII. The R.E.S. as a Protective Apparatus in Meningococcus Infection**]. —*Ibid.* 685-689. 2 tables. [15 refs.] [In German: English, French and Italian summaries].

I. When a 1% solution of Congo red is inoculated (intraven.) into rabbits, the bulk of the dye is rapidly removed from the circulation by the R.E.S. An index of absorption (Congo red or "C.R. index") is the amount of dye absorbed within 60 minutes of the inoculation of 10 mg. per kg. body weight. The amount of dye unabsorbed can be estimated by a colorimetric technique. When rabbits received a single injection of a suspension of salmonella, the C.R. index was unchanged. When reinoculated six days later, the C.R. index immediately dropped markedly after the inoculation and only commenced to rise 24 and 48 hours later. This rise was accompanied by a correspondingly sharp rise in the antibody content, but the degree of blockade of the R.E.S. was independent of the agglutinin titre. It is considered that the C.R. index serves as an indication of the immunological state of the patient. [It is not clear how it can be ascertained whether changes in the C.R. index are due to changes in the immunological state towards the specific infection under consideration, or to non-specific causes].

II. Splenectomized and normal rats were inoculated with lethal doses of

pneumococci together with protective doses of homologous antipneumococcal serum. All 20 splenectomized rats died within two to seven days whereas only one out of 20 unsplenectomized rats died. This is considered to be evidence that the therapeutic value of antipneumococcal serum is dependent upon the functional integrity of the reticulo-endothelial system.

III. Out of 103 mice splenectomized and blockaded as above, 56 died when inoculated with a lethal dose of *Clostridium oedematiens* toxin followed, one hour later, by a neutralizing dose of antitoxin. Of 101 control mice with undamaged R.E.S. which were similarly inoculated, only seven died.

IV. Fourteen out of 21 splenectomized mice which received an injection of meningococci died in two to three days, whilst only nine out of 21 non-splenectomized mice died within four to five days. Furthermore, 43 splenectomized mice with the R.E.S. blockaded by a heavy inoculation of ferric saccharate and trypan blue were inoculated with meningococci; 31 of them died, whilst only four out of 43 untreated mice died. As controls, 33 mice were splenectomized and blockaded but received no meningococci; only one died.—E. J. PULLINGER.

MAIGNON, F. (1935). Anaphylaxie et sensibilisation. [**Anaphylaxis and Sensitization**].—*Rec. Méd. vét.* **111.** 513-530. [5 refs.]

The author gives a synopsis of the theories put forward by other workers.

He believes that the foreign protein introduced is broken up by two enzymes or sets of enzymes into :– (1) peptones, and (2) amino-acids. The foreign protein causes the production of the first enzyme, which then breaks the protein to a toxic product. This toxic product causes the formation of the second enzyme which changes the toxic product into an atoxic state.

The first injection causes both enzymes to appear, but no harm is done, as the toxin is immediately rendered atoxic by the second enzyme.

He suggests that the second enzyme disappears first from the body and has completely disappeared two or three months after the first injection, but that the first enzyme still persists. A second injection at this time leads to a massive production of toxic products; as the second is not present to destroy, an anaphylactic shock ensues. If the animal survives, then the re-appearance of the second enzyme leads to a rapid return to normal by destroying the toxin. This also explains the latent period necessary for sensitization, as well as the manifestations of anaphylaxis.

If the theory is correct, then the enzyme extracted from the blood of a sensitive animal, injected into a " clean " animal, will make the latter sensitive. This the author successfully demonstrated.

He isolated the second enzyme which, when injected into a sensitized animal, effected a marked amelioration or completely effaced the evidences of anaphylactic shock, following the " dechainant " injection. The symptoms of anaphylactic shock are similar to those produced on stimulation of the parasympathetic nervous system; this was supported by experiment.

In asthma, the foreign protein enters by the air passage. Similarly protein may enter by the alimentary tract and lead to an anaphylactic condition.

Beneficial results have been obtained by the intentional production of anaphylactic shock in certain conditions.—F. A. GORDON.

KRUEGER, A. P., & NICHOLS, V. C. (1936). **Effect of Preservatives on Undenatured Bacterial Antigens.**—*Proc. Soc. exp. Biol., N.Y.* **34.** 335-357. 1 fig. [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 790. Signed J. C. CRUICKSHANK].

Quantitative tests were carried out on antigens consisting of the filtered

fragments of washed staphylococci ground in a ball-mill to determine the extent of denaturation caused by storage in various antiseptics added for preserving purposes. Only about half as much denaturation took place at 22°C. in the presence of 1 : 50,000 or 1 : 20,000 merthiolate as with 0·5 per cent. phenol or 0·3 per cent. tricresol. The greater denaturation noted at summer temperatures than at 22°C. appeared to be a reversible change.

DISEASES, GENERAL.

I. Delpy, L. (1936). Agents pathogènes observés en Iran dans le sang des animaux domestiques. (Note préliminaire). [**Protozoan Diseases of Domestic Animals in Iran**].—*Bull. Soc. Path. exot.* **29.** 157-161. 1 table.

II. Delpy, L. (1936). Sur les maladies contagieuses des animaux domestiques observées en Iran de 1930 à 1935. [**Infectious Diseases of Domestic Animals in Iran from 1930 to 1935**].—*Bull. Acad. vét. Fr.* **9.** 206-210. 1 table. [5 refs.]

I. [In this abstract the names used by the author are given although certain of them differ from those which are fairly generally recognized].

An account of the various pathogenic agents observed from 1931 to 1935. A table is given of piroplasms found, together with the *Theileria* species, classified according to Wenyon, 1926, and Donatien and Lestoquard, 1930, the names of the latter being used. In sheep, *Piroplasma ovis* has been isolated and experimentally transmitted and, in addition, *Babesiella ovis*, *Theileria ovis*, and *Th. recondita* have been encountered. The author reports that he has recently isolated *Th. dispar* and *Th. mutans*.

Babesiasis of bovines is rarely encountered. *P. caballi* [*B. caballi*], and *Nuttallia equi* [*B. equi*], have been isolated from imported horses. One injection of " gonacrine " caused a disappearance of the parasites. Trypanosomes that are morphologically identical with *Tryp. evansi* have been isolated from the blood of camels. Anaplasms, eperythrozoa and bartonella are classified in the report as bacteria. *Anaplasma ovis* is rarely found except in imported sheep. It is usually associated with theileria and eperythrozoa.

In addition, *A. marginale*, *Eperythrozoon ovis*, *E. wenyoni*, and *Aegyptianella pullorum* are encountered.

II. A brief account of the following diseases is given :– rinderpest entered from Turkey in 1931 and travelled east ; it is successfully controlled with formolized vaccines. Foot and mouth disease has seldom been reported ; it is rarely fatal and is controlled by the usual methods. Cont. bov. pl.-pneumonia occurred in 1932. It is said that its spread was rapidly arrested by " Willems' method " of vaccination but it still persists. Pleuro-pneumonia of goats is also present [aetiology not described] and is successfully controlled by a formolized tissue vaccine. Other diseases encountered are :– strangles, anthrax, glanders, pasteurellosis, blackleg, contagious agalactia, sheep pox, and rabies. In addition, various parasitic and other affections are mentioned.—R. Fisher.

Pistelli, F. (1935). Influenza del pH nello sviluppo e nel decorso delle infezioni negli animali. [**Effect of the pH on the Development and Course of Infections of Animals**].—*Profilassi.* **8.** 213-215. 4 tables. [2 refs.]

It has been suggested that, if the acid-base equilibrium of the body becomes

upset, the pathogenicity of invading organisms may be increased. P. studied this point by means of intravenous injections of acid or alkaline solutions into rabbits. The injections were given daily for ten days and the pH of the urine determined. A test dose of 1 c.c. of broth culture of streptococci was then given. It was found that, after treatment with acid, the test dose was rapidly fatal whereas, after treatment with alkali, the virulence of the organisms appeared to be reduced. [The composition of the acid and alkaline solutions used in the experiments is not stated].—J. A. NICHOLSON.

DOBBERSTEIN, J. (1936). Beiträge zur Pathologie des Zentralnervensystems bei Tieren. III. Leptomeningitis mykotica bei einem Elch. [**Pathology of the Central Nervous System of Animals. III. Leptomeningitis Mycotica in an Elk**].—*Berl. tierärztl. Wschr.* **52.** 144-145. 1 fig. [11 refs.] [See also *V. B.* **6.** 208].

The *post-mortem* examination of an elk showed proliferative inflammation of the mucosa of the nasal cavities and scattered foci in the lungs: fungous filaments were observed in both lesions. The pia mater of the brain was similarly affected and was in a state (histologically) of acute purulent-haemorrhagic leptomeningitis. —J. E.

KATCHANOV, G. A. (1935). Učenie o gematoencefaličeskom barere i ego značenie pri infekcionnich zabolevanijach u zivotnich. [**The Blood-Brain Barrier and its Importance in Infectious Diseases of the Central Nervous System**]. —*Sovyet. Vet.* No. 12. pp. 36-39. [French summary].

The author refers to the chemotherapy of equine encephalomyelitis [so far there is no evidence of the value of any drug for this purpose]. He refers to the impermeability of the blood-brain barrier to antibodies and to other agents and discusses measures to permit them to pass this barrier. He found that K I (100-200 c.c. of 3% sol.) injected (intraven.) did not pass to the cerebrospinal fluid.

LENTZ, R. W. (1936). Arbeiten über Schweinekrankheiten im Jahre 1935. [**Work on Swine Diseases in 1935**].—*Berl. tierärztl. Wschr.* **52.** 349-352.

The author reviews critically the new discoveries in pig disease research of 1935 and covers a wide field. The following are the most important examples.

TERPSTRA, in Holland, confirmed WALDMANN'S theory of the causation of piglet influenza but PAULSEN, in Germany, and MANNINGER, in Hungary, failed to do so. An attempt to breed a race of pigs resistant to swine influenza failed. Among the diseases of young pigs, an atypical form of pox occurs commonly in certain districts [*V. B.* **5.** 273]: it sometimes accompanies outbreaks of swine fever or erysipelas.

L. refers to reports of necrotic enteritis in the U.S.A. and in England, and reviews the work on immunization against swine fever. No worker has yet produced a reliable tissue vaccine.

After brief references to swine erysipelas, Aujeszky's disease and infectious abortion, records of poisoning by petroleum, chenopodium, solanin and beetroot are mentioned.

Pig breeders are advised that they must return to a more natural way of keeping pigs if they wish to avoid severe losses from disease.—J. E.

MARSHALL, D. (1936). **Factors leading to Excessive Wastage in the Pig Industry.** —*N. Z. J. Agric.* **53.** 150-156.

The author emphasizes the necessity for care in the rearing of pigs, owing to the large numbers condemned at slaughter on account of tuberculosis, pleurisy, faulty castration wounds, etc. Other preventable serious losses occur at birth and at weaning. He advocates good draught-proof housing with sufficient accommodation for all pigs, and bedding in cold seasons; clean runs and feeding-places; correct feeding, particularly of the pregnant sow, and of the litter and weaner; and temporary isolation of newly bought-in pigs.—C. S. M. HOPKIRK.

I. ELZÉN, S. (1936). Korsförlamningen från klinisk synpunkt. [**Clinical Notes on Equine Myohaemoglobinuria Paralytica**].—*Svensk VetTidskr.* **41.** 137-147.

II. CARLSTRÖM, B. (1936). Korsförlamningens atiologi och patogenes. [**Aetiology and Pathogenesis of Myohaemoglobinuria Paralytica**].—*Ibid.* 191-198. 1 graph.

I. CARLSTROM advanced the "lactic acid theory" to explain the causation of the disease. He considered that excessive production of lactic acid from glycogen, in connexion with the disturbances in the blood supply of the muscles, is the decisive factor [*V. B.* **1.** 234].

E. regards C.'s conclusions as doubtful. He puts forward a new theory, that the symptoms and lesions are due to a specific muscle-toxin produced by abnormalities in the digestive process in the intestinal canal. He proposes a therapeutic method based on his theory, namely, the intravenous injection of luminal – 10 to 20 g. in 100 c.c. of water, and 5 g. methylene blue *per os*.

II. In this paper C. defends the lactic acid theory. His arguments are mainly based upon his original experimental work. He also points out that E.'s. theory is not based on sufficient experimental work.—H. BERTHELSEN (STOCKHOLM).

PROTASEN, T. P. (1936). Soderžanie kalcija chloridov e rezervnaja ščeločnost krovi u lošadej pri gemoglobinemii. [**The Calcium and Chloride Content and the Alkali Reserve of the Blood of Horses with Myohaemoglobinuria**].—*Sovyet. Vet.* No. 3. pp. 80-83. 1 fig., 2 tables.

The author found that the Ca and Cl content of the blood are not appreciably altered, but that in myohaemoglobinuria the alkali reserve tends to fall.

CISOWSKI, A. (1935). Przypadek skostnienia uszka i ściany przedsionka prawego w sercu u konia. [**Ossification of the Myocardium in a Horse**].—*Przegl. wet.* **48.** 724-733. [7 refs.] [German summary].

The *post-mortem* examination of a nine-year-old horse revealed ossification of the right auricle, a large part of the wall being considerably thickened by connective tissue in which were embedded several lamellae of cartilage and bone. Neither new blood vessels, osteoblasts nor chondroblasts were present, the mass being of embryonic and not of inflammatory origin.—K. SZCUZDŁOWSKI (LWÓW).

GRINI, O. (1936). Krampe hos sølvrev. [**Convulsions in Silver Foxes**].—*Norsk VetTidsskr.* **48.** 113-115.

The author gives a brief survey of the aetiology of some different forms of convulsions in silver foxes.

As dysfunction of the parathyroid glands is the probable cause of certain types of convulsions in other species, he suggests that parathyroid extract should be administered.—GUSTAV NAERLAND (OSLO).

Salgues, R. (1935). Les tumeurs en pathologie comparée. [**Tumours in Comparative Pathology**].—*Rev. gén. Sci. pur. appl.* **46.** 395-405.

This interesting paper deals with a very wide field – the systematic classification of " tumours " in the plant and animal kingdoms. The introduction deals briefly with the multitude of conditions included under " tumours ", and in rather more detail with the problem of neoplasia. The author doubts whether true metastasis occurs in plant neoplasms ; primary and secondary growths are always connected by visible strands of tumour cells.

The classification suggested is an aetiological one, the name " cécidie " (plant " tumour ") or " thylacie " (animal " tumour ") being provided with a prefix denoting the vegetable or animal parasite responsible for its production, *e.g.* bactériothylacie, nematocécidie, etc. Each of these, with the exception of plant " tumours " caused by animal parasites which are to form the subject of a second paper, is considered in more or less detail, with examples. [It is understood that the second paper will not be published for some time].—E. G. White.

Mouriquand, G., Leulier, A., & Coeur, A. (1936). L'hypertrophie splénique dans le rachitisme expérimental. [**Splenic Hypertrophy in Experimental Rickets**].—*C. R. Soc. Biol. Paris.* **122.** 1116-1118. 2 tables. [2 refs.]

The spleens of rats subjected to a rachitogenic diet, with or without the addition of vitamin D supplements, were about one and three quarter times as heavy as those of normal rats, and those of rats on a basal rachitogenic diet containing strontium carbonate were about two and a half times as heavy as normal.—A. E.

Hopkirk, C. S. M. (1936). **Deficiencies Known and Suspected in Live-Stock Nutrition of New Zealand.**—*N. Z. J. Agric.* **53.** 200-204.

Deficiencies of iodine, phosphorus, calcium and magnesium, and iron and cobalt, are dealt with in order. The paper tabulates the present knowledge and results of research work in New Zealand.

Wall, S. (1936). **Faulty Feeding as the Cause of Abortion in Horses.**—*Acta path. microbiol. scand.* Suppl. 26. pp. 154-157. [In English].

An account of an investigation already reported elsewhere [*V. B.* **6.** 357].

Franklin, M. C. (1936). **An Investigation of the Nutritional and Biochemical Effects of a Low-Calcium Diet on Sheep.**—*Rep. Inst. Anim. Path. Univ. Camb. 1934-1935.* pp. 111-178. 6 figs. on 2 plates, 38 tables. [Num. refs.]

A number of ewes and lambs were maintained on a diet adequate in starch equivalent and digestible protein, but deficient in calcium, for periods of from four to six months. This diet had no effect upon the digestion coefficients of the organic constituents of the food. Studies of the nitrogen and mineral balances of these sheep showed that they soon adapted themselves to a very low mineral intake. Under these conditions the blood calcium fell very quickly and the blood inorganic phosphorus and magnesium rose, while serum sodium and potassium did not vary significantly.

Six pregnant ewes on the calcium-deficient diet showed a still greater fall in blood calcium, rising after parturition, although individual variation was very great. The ratio of diffusible to non-diffusible calcium and magnesium was not significantly affected by the low calcium diet and it is suggested that tetanic symptoms are not controllable by the level of diffusible calcium in the blood. Injections of calcium gluconate temporarily raised the blood level, but in most cases the initial low level was again reached within 24 hours and failed to save moribund

animals. Chemical studies were also made of the skeletal structure of ewes and lambs on this diet and also of the composition of the milk and the effect upon pregnancy.—Alfred Eden.

PUBLIC HEALTH.

Barnes, M. E. (1936). **Attainable Standards in the Bacterial Counts of Raw and Pasteurized Milk.**—*Amer. J. publ. Hlth.* **26.** 561-566. 2 figs., 2 tables. [1 ref.] [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 847. Signed W. G. Savage].

Most of the paper deals with the bacterial counts attained with milk from a particular dairy which at first was very unsatisfactory as regards the sanitary conditions in cowshed and dairy. It was found possible to obtain milk with an arithmetical average bacterial count of 1,600, the individual counts ranging from 100 to 19,000 per cc. A bacterial count above 2,000 was regarded as indicative of either mastitis or environmental errors. With three dairies, 32·2 per cent. of raw milk was within this ideal zone of 2,000 and 83·9 per cent. was under 10,000 in bacterial count. With pasteurized milk both arithmetical and logarithmic averages were rejected and for the limit of excellence 1,000 per cc. was taken. During the last nine months this ideal zone was maintained with all the milk.

Pérez Pardo, J. (1936). Leches tuberculosas de consumo en Madrid. [**Tuberculous Milk for Human Consumption in Madrid**].—*Rev. Sanid. Hig. publ., Madr.* **11.** Pt. 2. 1-12. [27 refs.] [French summary]. [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 848. Signed H. H. S.]

Two hundred samples of milk were obtained from dairies in Madrid. The cream and the sediment were both examined for acid-fast bacilli. Inoculation tests were also made with guineapigs. At autopsy of these, if any positive or even suspicious indications were found, fresh guineapigs were inoculated and also rabbits. The organs were examined for acid-fast bacilli and cultures attempted on Löwenstein's, Hohn's, Petroff's and Dorset's media. Among the 200 there were 16 containing *Myco. tuberculosis*, mostly of the bovine type, but in a few there were also bacilli with the characteristics of the human type.

Majoewsky, W. H. F. C., & Tuenter, J. P. A. (1936). Kaasvergiftigingen. [**Cheese-Poisoning**].—*Tijdschr. Diergeneesk.* **63.** 317-325 and 382-396. [Numerous refs.] [English, French and German summaries]. [Also appeared in *Antonie van Leeuwenhoek Nederl. Tijdschr. v. Hyg. Microbiol. en Serol.* **2.** 388].

M. and T. give a review of cheese-poisoning. Experiments have proved that the condition cannot be due to the presence of non-specific toxic products of putrefaction and no metallic salts were present. The possibility that a coliform organism might be the cause is discussed, but no conclusive evidence is available.
—M. J. J. Houthuis (Rotterdam).

THERAPEUTICS AND MATERIA MEDICA.

Askew, H. O., & Dixon, J. K. (1936). **The Importance of Cobalt in the Treatment of Certain Stock Ailments in the South Island, New Zealand.**—*Cawthron Inst. sci. Res. Pasture & Soils Publ.* No. 35. pp. 20. 5 figs.,

5 tables, 3 graphs. [4 refs.] [Also appeared in *N. Z. J. Sci. Tech.* **18.** 73-92].

Cobalt has been found to prevent and cure " bush sickness " in the Glenhope district, when given in doses of 8 mg. per week. Nelson soil, which had been used for treatment with good results previously, was found to contain 43 parts per million cobalt against 0·4 parts per million in Glenhope soil.

Analyses of limonite from various sources showed a serious shortage of cobalt in many samples. Only a few have cobalt present in useful quantity and those few will cure " bush sickness ".

Lambs in parts of Southland tend to die after weaning, but adult sheep remain in good health. Cobalt treatment prevents the mortality in the lambs. Seasonal variations may influence the amount of cobalt required to keep the lambs in health.

Various soils found effective in lamb experiments were effective only because of their cobalt content.—C. S. M. Hopkirk.

Garrison, E. R., & Turner, C. W. (1936). **The Effect of Udder Irrigation and Milking Interval on Milk Secretion.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 234. pp. 39. 14 figs., 3 tables. [Numerous refs.]

Eight cows free from mastitis and varying from one to nine months in lactation were milked at 12-hour intervals and the yield of each quarter recorded. Individual quarters were irrigated with 750 ml. of distilled water, thin liquid paraffin, solutions of calcium chloride, sodium chloride and lactose in various concentrations, and a mixture of sodium chloride and lactose, whilst some were inflated with oxygen. The material was left in the quarters for 12 hours. Milk was also returned to the udder after milking, whilst the interval between milking was increased, in some cases to 24 hours. An interval of one week or longer was allowed between irrigations or inflations to permit the udder to return to normal.

The results are presented by graphs. It is shown that irrigation with any of the substances, or inflation, caused a varying decrease in the milk yield, and a decrease in the lactose content of the milk, but an increase in the fat, chlorine, protein, leucocytes, catalase and the pH for several subsequent milkings. The effect produced increased with the concentrations of the fluids injected, distilled water having least effect (not excluding milk) whilst a solution of calcium chloride was more detrimental than one of sodium chloride. When milking intervals exceeded 18 hours the composition of the milk was slightly altered, but suspended milking for 24 hours, although affecting the yield and composition for three or four days, produced much less disturbance than irrigation or inflation.

It was concluded that the changes produced by irrigation, inflation or suspended milking are caused by impaired activity of the cells, due to pressure, together with an increased permeability to certain substances. Distilled water being rapidly absorbed, the pressure exerted is of short duration, whilst in the case of paraffin, owing to it not being absorbed, the pressure is maintained. Milk returned to the udder exerts a greater pressure than milk which accumulated in the udder as, prior to milking, some of the milk was contained within the cells which were, therefore, dilated with milk and so not submitted to the same pressure as when the milk was returned to the udder.—H. E. Bywater.

Haman, R. W., & Steenbock, H. (1936). **The Antirachitic Effectiveness of Vitamin D from Various Sources.**—*J. biol. Chem.* **114.** 505-514. 2 tables, 1 chart. [Numerous refs.]

Irradiation failed to increase the antirachitic activity of certain fish oils, the

effectiveness of which was approximately the same for chicks and rats. Unit for unit, irradiated animal fats showed greater antirachitic activity for chicks than irradiated plant oils. When ergosterol or cholesterol was irradiated in solution, the solvent had no influence upon the effectiveness of the resulting vitamin product as determined on chicks.—Alfred Eden.

Píša, A. (1936). Poznámky k článku " Ochrana jatečného dobytka proti pusobení půchýřotvorných látek " v poslednim čisle Voj. intend. rozhledů. **[The Protection of Animals against Poison Gas]**.—*Voj. Vet.* **5.** 11-15. [English summary].

The author criticizes articles dealing with the use of poisonous gases in warfare, saying that they are often full of errors. He concludes his article as follows :– the numerous papers published on the effect of gases used in warfare must be read very critically. Only those papers are of value which deal with experimental work. Results of experiments with men and with one kind of animal cannot be applied to other animals. The issue of loose statements is to be deprecated.

—E. Přibyl (Brno).

POISONS AND POISONING.

Hopkirk, C. S. M. (1936). **Paspalum Staggers.**—*N. Z. J. Agric.* **53.** 105-108. 2 figs. [6 refs.]

The article deals with the feeding to cattle of seed heads of paspalum affected with *Claviceps paspali*. Considerable ataxia was noticed in cattle in the Auckland district feeding on such material and the condition was reproduced in feeding experiments conducted at Wallaceville. It was noticeable that the younger forms of the *Claviceps* brought about an ataxia, whereas the fungus fed in the sclerotia stage produced only a violent trembling of the muscles but no difficulty in movement.

A discussion of experiments conducted on *Claviceps purpurea* is appended.

PHYSIOLOGY.

Besselaar, H. J., & Quin, J. I. (1935). **Studies on the Alimentary Tract of Sheep in South Africa. III. The Influence of Bowel Anastomosis on the General Nutritional State of Merino Sheep.**—*Onderstepoort J. vet. Sci.* **5.** 501-514. 1 fig., 2 tables, 4 graphs. [6 refs.]

Using a side to side anastomosis, the proximal half of the small intestine in eight merino sheep was joined to the tip of the caecum, the lower half of the small intestine being left *in situ* after closure of the stump distal to the anastomosis. In a second series of eight sheep the proximal half of the small intestine was anastomosed on to the ansa spiralis of the large intestine, thus excluding both the lower half of the small intestine and the upper third of the colon. All animals were kept on the same adequate ration.

Thirteen out of the 16 sheep died within 12 months, following progressive loss of condition and repeated attacks of diarrhoea. The examination of the carcasses revealed varying degrees of cachectic and atrophic change, especially noticeable in the portions of intestine excluded by the anastomosis which were very anaemic and thread-like. No retrograde filling took place into these parts. There was no significant difference in the condition of the sheep which had lost

portions of small intestines as compared with those which in addition had lost the function of the proximal third of the colon. Inspissated secretions, but no food residues, were found in the caecum in the latter series.

Curson, H. H., & Bisschop, J. H. R. (1935). **Anatomical Study No. 60. Some Comments on the Hump of African Cattle.**—*Onderstepoort J. vet. Sci.* **5.** 621-644. 19 figs.

After discussing the probable parent stocks of African cattle, and describing the macroscopic appearance of the humps of the lateral-horned zebu (Afrikander), the short-horned zebu (Tanganyika) and the Sanga (Ambo) cattle, the result of a detailed anatomical comparison is given in tabular form. Special attention is paid to the m. trapezius and m. rhomboideus, which play a dominant part in the formation of the hump, and determine its position, which is thoracic or cervico-thoracic. This study shows that (a) the Afrikander and Ambo breeds possess a cervico-thoracic hump which is muscular in structure, and (b) the short-horned zebu, on the other hand, possesses a thoracic hump which is musculo-fatty in structure.

This result indicates that valuable information concerning the evolution of types and breeds of cattle may be obtained from a study of the hump and possibly of other soft structures, in addition to the usual method of osteology.

Modes, E. (1936). Das Blutgefässbild des Augenhintergrundes bei den Haussäugetieren. (Pferd, Rind, Schaf, Ziege, Schwein, Hund, Katze und Kaninchen). [**The Blood Vessels of the Fundus Oculi of Domestic Animals (Horse, Cow, Sheep, Goat, Pig, Dog, Cat and Rabbit)**].—*Arch. wiss. prakt. Tierheilk.* **70.** 449-472. 9 figs. [Numerous refs.]

M. reviews the literature and gives the results of his own examinations of many pairs of eyes of domestic animals. The original should be seen, particularly on account of the illustrations. The characteristic differences in the blood-vessel arrangement of the retina as between equines, ruminants, and carnivora is noteworthy. Horses have no central retinal artery or vein, the vessels springing from an area called Zinn's corona. Ruminants and carnivora have a central artery and vein, but its position varies in the different species. It is interesting to note that the blood-vessels of a pair of eyes correspond in arrangement almost exactly.

—J. E.

I. Constantinesco, G. K. (1935). Sur l'hérédité dans l'élevage des animaux domestiques. [**Genetics in Animal Breeding**].—*12th Int. vet. Congr. 1934.* **3.** 422-437. [English, German and Spanish summaries].

II. Letard, E. (1935). Les applications de la génétique à l'élevage des animaux domestiques. [**Genetics in Animal Breeding**].—*Ibid.* 437-449. [English, German and Spanish summaries].

III. —. (1935). **Discussion of Papers on Heredity.**—*Ibid.* 449.

I. The author deals with the place of genetics in relation to animal husbandry and veterinary education. He first refers to the progress made by this branch of biology since 1900 and the material rewards which have followed its study and application. He pays special tribute to the work of Morgan in America. He then deals with several general considerations regarding the law of Mendelism, the hereditary structure of characters and the application of that knowledge to selective breeding of animals. The importance of genealogical registrations, examination of offspring, genotype selection and direct examination of product is emphasized. He ends with a plea for the extension of instruction on genetics in veterinary

schools, greater attention to applied genetics by veterinary societies, international agreement towards a closer collaboration in regard to its development, and the retention of the subject in future programmes of the International Veterinary Congress.

II. This is a discourse on the application of the science of genetics to animal breeding and the explanation of certain established facts of heredity in the light of scientific knowledge. The author points out that experimental work carried out on small laboratory animals can provide the zootechnician with results of practical value in the larger field of animal husbandry. By way of example he gives details of his own experiments on the crossing of short-coated rabbits, which produced litters with long hair, and on the inheritance of " hairlessness " in dogs. He states that the results obtained in this work can be employed in explanation of certain hereditary phenomena. Physiological tendencies in relation to breeding are then considered, particularly milk and butter production. The author admits that such present special difficulties for genetic analysis, but he believes nevertheless that if breeders are to obtain the results they desire, a close attention to scientific methods is essential.

III. This is an expression of the views of a single speaker on I [above]. It deals mainly with the difficulties of applying the Mendelian law in the zootechnical field. The speaker supports the author of the article in his recommendations for securing a closer study of genetic methods.—C. Davenport.

Znamensky, A. A., & Zobnina, B. C. (1936). Ocenka spermi žerebcov vitebskogo raiona i ee značenie dlja slučnoj kampanii. [**The Semen of Stallions in the Vitebsk District and its Significance for Mating**].—*Uchen. Zap. Vitebsk vet. zoo. Inst.* **3.** 217-220.

The horse-breeding conditions around Vitebsk were investigated in relation to the 66 stallions in use. Samples of their semen were examined and correlated with their general clinical condition. The semen of 46 was considered satisfactory as judged by microscopic examination and in a few, but not all, cases of deficient semen, poor feeding was found to be implicated.

Mazel, M. (1935). Vliv thyreotropního hormonu hypofysy na žlázu štítnou slepice. [**Influence of Pituitary Hormone on the Thyroid Gland of Fowls**]. —*Zvěrolék. Rozpravy.* **9.** 281-288, and **10.** 1-10. 4 figs. [Numerous refs.] [German summary].

It was found that the anterior pituitary exerted a strong thyrotropic action when fed in large doses to fowls. The thyroid increased in size and activity, as is the case in mammals similarly treated.—E. Přibyl (Brno).

I. Coronel, A. B. (1936). **Experiments on Urine Pregnancy Tests in Cows.** —*Philipp. J. anim. Indust.* **3.** 273-280. 4 tables. [3 refs.]

II. Anderson, J. (1936). **The Biological Diagnosis of Pregnancy in Animals.** —*Vet. J.* **92.** 200-211. 2 figs. on 1 plate. [Numerous refs.]

III. Gustus, E. L., Meyer, R. K., & Woods, O. R. (1936). **Preparation of the Gonadotropic Hormone of Pregnant Mare Blood.**—*J. biol. Chem.* **114.** 59-63. 1 table. [13 refs.]

I. Immature female mice were found to be the best test animals for pregnancy diagnosis in cows. After concentrating the urine by the method of Eberson and Silverberg for the human subject, a higher degree of accuracy in diagnosis was obtained than by the Aschheim-Zondek test.

II. The early biological diagnosis of pregnancy is at present practicable only

in the mare. In this paper the author records his results on pregnancy diagnosis based on the excretion of oestrone in the urine. For the test, ovariectomized mice are injected with urine which has been treated with sulpho-salycylic acid in order to detoxicate it and to precipitate any protein present. Complete cornification of the vaginal cell contents is regarded as a positive result. Since oestrone is present in the non-pregnant mare during the oestrous cycle, in non-pregnant mares which do not show any signs of heat and also in nymphomaniac mares, the urine test employed was a quantitative one. For a positive result, more than 1,000 mouse units of oestrone per litre of urine must be present. This amount is usually present in pregnant mares by about the 60th to the 65th day but is subject to a good deal of variation. The author carried out 438 estimations on 148 pregnant mares with an accuracy of over 99%.

III. The citrated plasma is well diluted with water and the gonadotropic hormone is separated by selective adsorption to aluminium hydroxide (Willstätter Type A). The active material is subsequently recovered by elution with 1% ammonia solution.

A method is described for the preparation of solutions of the hormone for clinical study.—N. J. Scorgie.

MISCELLANEOUS.

—. (1936). **Live-Stock in New Zealand, 1936.**—*N. Z. J. Agric.* **53.** 192. 1 table.

The following are the totals of stock as at 31st January, 1936 :–

Horses	276,170
Dairy cows in milk and dry	1,951,507
Total cattle	4,254,078
No. of sheep shorn 1935-36	26,278,477
No. of lambs shorn 1935-36	3,618,648
No. of lambs tailed 1935-36	15,696,617
Total sheep including lambs April 30th, 1936 ...	30,039,133
Pigs	808,463

—C. S. M. Hopkirk.

Hardenbergh, J. G. (1936). **Veterinary Service in the Control of Dairy Products.** —*Amer. J. publ. Hlth.* **26.** 597-605. 3 tables. [5 refs.]

It is contended that, in the U.S.A., an outstanding contribution has been made to the control of bovine diseases by the veterinary services utilized in the control of dairy products. The percentage of veterinarians engaged in private practice and state services is analysed.

The official control and eradication of bovine tuberculosis is undertaken by the Bureau of Animal Industry in co-operation with the states' bureaux. The milk industry is supervised by the states and municipalities and the agencies regulating the milk supply. Authorized veterinary surgeons examine the dairy herds, whilst milk and dairy inspection is performed by part and whole-time veterinary surgeons working for the producers' and distributors' organizations.

The progress of tuberculosis eradication by means of the tuberculin test is traced. The first tests were carried out in 1892, but compensation to owners was not adopted until 1917.

In 19 years, 150 million tuberculin tests were made which detected three and a quarter million reactors, with a result that in May, 1935, 72·8% of the counties in the U.S.A. had less than 0·5% reactors to the test. There has been a convincing

reduction in human deaths from tuberculosis since 1918. Prior to 1918 the deaths from tuberculosis, other than pulmonary, were increasing, but since this date there has been a marked decline (21·4 per 100,000 in 1918 to 5·9 per 100,000 in 1933).

Industrial supervision has proved of immense benefit; the better educated are the producers, the healthier are the herds and the better the milk. Bonuses are given for fat content, and low bacterial counts, in addition to the higher prices received for graded milks. Brief mention is also made of mastitis, its significance from the public health point of view and its control.—H. E. Bywater.

Saint-Prix, M. (1935). L'élevage en Guyane française. [**Animal Husbandry in French Guiana**].—*Rec. Méd. vét. exot.* **8.** 124-129.

This is a general review of the present situation and possibilities of animal husbandry in French Guiana. The nature of the terrain is first described in some detail. Only a limited amount affords good grazing. Animal industry is a minor feature in rural economy, there being only 3,500 cattle, 5,000 pigs, 100 equines and a few sheep and goats in the whole territory. For grazing purposes cattle are turned loose to wander as they will and farming methods as ordinarily applied to cattle are unknown. A few good specimens of the Porto-Rico and Durham breeds are met with, the descendants of importations made in 1906. Horses are found only in the towns, where they are employed mainly in harness work. They are few in number and of poor stamp. There are a few donkeys. Mules are entirely importations. Pigs are kept in a semi-wild state and this branch of the industry offers scope for improvement and development. Goats do well, sheep less so.

The chief obstacles to the development of animal industry at present are the enclosing of grazing areas for arable purposes, the destruction of animals which stray into these enclosures, the occurrence of anthrax and other epidemics and the presence of wild animals, snakes and poisonous insects. The low price at which imported meat is obtainable is also a serious hindrance to the development of the animal resources of the country.—C. Davenport.

Joltran, E. (1936). Impressions générales sur la médecine en U.R.S.S. Les Instituts de Médecine Tropicale. [**Some General Impressions of Medicine in the U.S.S.R. including the Institutes of Tropical Medicine**].—*Maroc méd.* **16.** 79-83.

The author records impressions gained during a tour of the medical schools, hospitals and institutions of the U.S.S.R. The work of the various research institutes, particularly the Institute of Tropical Medicine at Moscow, is discussed. The latter is organized in sections devoted to the study of epidemiology, entomology, helminthology, leprosy, mycosis and biochemistry. A short description is given of the chief activities of each.

The article contains nothing of purely veterinary interest beyond a brief note on a new process for the treatment of actinomycosis in man and animals, in which use is made of a broth filtrate possessing lytic properties for the causal organism.—C. Davenport.

Nicolski, N. M. (1935). Voenno-veterinarnaja služba k XVII godovsćine RKKA. [**The Condition of the Army Veterinary Service in U.S.S.R.**]—*Sovyet. Vet.* No. 2. pp. 2-4.

This article is written on Bolshevist party lines. For instance, it gives figures (percentages) of veterinarians who were members of the communist party in 1933 and 1934 respectively.

It lays stress upon the great importance of horses for the army and declares

" Our ideal should be :– ' Not one dead horse ' ". The author considers that the loss of horses is due to lack of care on the part of veterinary workers. He gives no details of organization and but few data.

Šifmanovič, G. L. (1935). Osnovnie vetmeroprijatija na 1935 g. [**Veterinary Programme for 1935 in the U.S.S.R.**]—*Sovyet. Vet.* No. 3. pp. 10-15. 1 table.

The veterinary programme for 1935 in the U.S.S.R. comprised the following items :– (1) the multiplication and improvement of veterinary clinics and veterinary sanitary stations throughout the U.S.S.R. ; (2) the improvement of laboratories for the production of biological products ; (3) the better control of epidemic diseases among animals ; (4) research work on unsolved veterinary problems ; (5) the better instruction of veterinarians, and (6) the placing of veterinary work in the U.S.S.R. on a sound financial basis.

OFFICIAL AND OTHER REPORTS.

Great Britain. (1936). **Report of the Chief Veterinary Officer to the Secretary of the Ministry of Agriculture and Fisheries for 1935.** [Kelland, P. J. L.] —*Proc. Dis. Anim. Lond. 1935.* pp. 5-81. 25 tables, 2 appendixes.

Part I of the report deals with new legislation introduced in the Diseases of Animals Act, 1935. The latter amends the Diseases of Animals Acts, 1894 to 1927, and gives power for the issue of Orders for the suppression of contagious diseases of poultry and for the regulation of the manufacture for sale and the importation, of vaccines, sera and other therapeutic substances intended to be used for veterinary purposes. The new act also gives the Ministry power to (1) provide or approve quarantine stations for animals or poultry before export ; and (2) adopt a policy of vaccination or serum treatment of animals exposed to infection in relation to any disease where the adoption of such a policy is considered to be effective.

Part II deals with the position in Great Britain of the notifiable contagious diseases of animals ; the list of notifiable diseases remains unchanged. Statistical tables are included in Appendix I showing the distribution of diseases in each county of Great Britain.

During the year there were 56 outbreaks (37 in England, 15 in Wales and 4 in Scotland) of F. and M. disease; Scotland had been free from this disease for a period of three and a half years. There were 13 new centres of infection in 1935 and full details of these are given. Twelve initial or " parent " outbreaks occurred, in regard to which no connexion with any other centre of disease could be traced ; despite the usual exhaustive enquiries, in none of these was the original source of infection definitely identified.

According to the return furnished by the local authorities, tuberculosis in one or other of the forms referred to in the Tuberculosis Order of 1925 was reported to exist on 25,032 premises during 1935 as compared with 24,512 premises in 1934. The number of animals examined by veterinary inspectors rose from 393,343 to 415,667. The examination of these animals resulted in 22,333 cattle being declared to come within the scope of the order. Of these, 22,237 were slaughtered by local authorities, and the total sum paid as compensation was £85,826, an average of £3 17s. 2d. per head. The numbers of affected animals in the four categories were (a) cows giving tuberculous milk, 861 ; (b) cows with tuberculosis of the udder,

4,083; (c) bovine animals with tuberculous emaciation, 5,915, and (d) bovine animals with a chronic cough and clinical signs of tuberculosis, 11,474.

On 1st February, 1935, the Tuberculosis (Attested Herds) Scheme was introduced. It is explained fully in the report and in Appendix II. At the end of the year there were 55 Attested Herds in England and Wales, comprising 2,108 cattle.

There were 477 outbreaks of sheep scab during the year as compared with 684 in 1934. The distribution of the disease and the measures adopted to deal with it are described. Outbreaks in the counties bordering the Pennine Range accounted for 187 outbreaks or 56% of the total in England. In Scotland, 30 outbreaks occurred on the mainland and 10 in the Outer Hebrides; 102 outbreaks were confirmed in Wales. A special Order was issued to deal with the serious sheep scab position in Merionethshire. Areas to which Parts II and III of the Sheep Scab Order of 1928 were applied are described. 31 sheep dips were approved in 1935 for the purpose of the Orders relating to Sheep Scab and Sheep Dipping in Great Britain.

The number of suspected outbreaks of swine fever was 15,541; of these 2,049 were confirmed as against 1,833 in 1934. Enquiries showed that 415 outbreaks were due to market infection or to infection during conveyance to or from markets; in 615 other outbreaks the affected swine had recently passed through a market and may thus have become affected. Approximately 80% of the outbreaks occurred in the Scheduled Area to which the Regulation of Movement of Swine Order of 1922 applies.

During 1935, 386 cases of anthrax were confirmed as compared with 395 in 1934. A table of probable origins is given.

There were 99 outbreaks of parasitic mange of equines involving 32 counties, as compared with 115 outbreaks in 31 counties in 1934.

Part III deals with the subject of importation with regard to preventing the introduction of contagious diseases of animals into Great Britain. The only cases of scheduled disease found in imported animals at the landing places were 54 cases of sheep scab.

Part IV deals with the protection of animals during transit and with exportation of horses and Part V with the export of pedigree and other livestock and of raw animal products under the regulations of the importing countries. The New Zealand embargo on direct shipment of ruminants and swine still operated.

In Part VI – Miscellaneous – the steps taken to investigate the problem of the warble fly pest which led to the issue of the Warble Fly (Dressing of Cattle) Order of 1936, are discussed.—J. C. Wallace.

Great Britain. (1936). **Veterinary Laboratory, Weybridge. Report of the Director to the Chief Veterinary Officer for 1935.** [Andrews, W. H.]—*Proc. Dis. Anim. Lond. 1935.* pp. 81-88. [18 refs.]

The main activities of the Laboratory are dealt with under two headings, *viz*:–

(1) Routine Services.—The following specimens were received for the purposes of diagnosis in suspected cases of the diseases dealt with under the Diseases of Animals Acts:– swine fever 4,960 (2,178 positive, 2,782 negative); anthrax 617 (443 positive, 174 negative); sheep scab 91 (76 positive, 15 negative), and rabies 10 (all negative).

In addition, 4,787 specimens were examined which were not suspected of being connected with any of the scheduled diseases. During the year 20,775 doses of anti-abortion "A" vaccine were supplied and 1,166 agglutination tests carried out in connexion with bovine abortion. 693 doses of BCG vaccine were issued

for inoculating selected herds. Fowl pox vaccine was issued for the inoculation of 321,782 poultry and 203,088 agglutination tests were conducted for *Salmonella pullorum* infection. 11,438 doses of avian typhoid vaccine were supplied. Nine cattle were immunized against piroplasmosis and anaplasmosis.

(2) Research.—The investigation of the distribution of *Brucella abortus* infection in the body of the " carrier " cow was concluded and published, and the study of *Br. abortus* infection in equines was continued. Favourable results were reported from the use of a killed vaccine in cases of fistulous withers and poll evil.

Autopsies and intensive biological examinations were made of 55 animals which had given doubtful or unusual reactions to the tuberculin test, and work was carried out on the relative value of different methods of testing cattle with tuberculin.

Further research on parasitic gastritis of sheep and acute parasitic bronchitis in adult cattle was carried out.

The biochemistry section dealt further with metabolic disorders of farm animals and the physiology of certain metals.

The poultry section continued work on Newcastle disease and infectious laryngotracheitis.

The report concludes with a list of papers published during the year on research work undertaken.—J. C. Wallace.

Great Britain. (1936). **The Lister Institute of Preventive Medicine. Report of the Governing Body, 1936.** pp. 21. [4to].

" Virus Diseases.—During the past five years considerable attention has been paid by workers on virus problems at this Institute to fundamental studies on the elementary bodies which are generally believed to constitute the sole effective etiological agents in all virus diseases. The fact that these bodies can now, by various procedures, be separated from crude virus-containing material in a state of comparative purity has greatly facilitated the study of their etiological relationships and . . . it has been possible by serological analysis, particularly agglutination experiments with highly concentrated suspensions, to demonstrate not only an etiological connection between the elementary body and the virus disease but also in some cases to explore the nature of the affinities, sometimes quite unexpected, between one virus and another."

Dr Salaman devised an *in vitro* technique for detecting serological affinities between the pox viruses of man and of animals : the work is being continued. Dr Amies studied the causal agent of the Rous No. 1 sarcoma and the Fujinami myxosarcoma of fowls, and by the aid of the ultra high-speed centrifuge was able to separate the actual infective agent from cell-free tumour extracts. The deposit so obtained is highly infective. When such deposit is seen by dark-ground illumination, its particulate nature is evident, the particles being regarded as elementary virus bodies. Professor Ledingham studied the elementary bodies of rabbit papilloma and myxoma ; there is already some evidence that they have something in common. Dr Hurst completed his study on equine encephalomyelitis : it is believed that the virus reaches the nasal mucosa by way of the blood stream, and thence reaches the brain *via* the perineural lymphatics of the olfactory nerves. Dr Hurst also worked on Aujeszky's disease, finding that in rhesus monkeys the virus is purely neurotropic.

" During some experiments on the intravenous inoculation of neurotropic viruses, it was observed that while virulent rabid rabbit brain given intravenously in moderate doses rarely produced infection, after passage in the guinea-pig brain even minute doses may be effective. The reason for this change in ' virulence ' is under investigation."

Serological Studies.—Research on various aspects of the " Vi " antigen

problem in *Salmonella typhi* and *S. paratyphi* was continued and work on the antigens of *Clostridium oedematis maligni* was undertaken. Work on *Cl. welchii* indicated the probable presence of a special antigen, which is believed to be associated with the power of " invasiveness " of the organism. Evidence suggests that this new bacterial antigen may actually be a prototype of the " D " toxin. General work on the *in vitro* analysis of *Cl. welchii* antigens is continuing. A study of selected races of mice possessing different resistances to salmonella infection indicated that the resistance is a group resistance to organisms of this genus. Serum from resistant mice possesses a specific inhibitory action on salmonella cultures. Resistant races also respond better by antibody production to vaccination than do non-resistant races.

Endocrinology.—Many research projects on sex hormones are recorded. The effects on castrated male and female rats of injections of androsterone, androsterone-diol, the water-soluble salt of androsterone and that of androsterone-diol, and of testosterone were studied. An interesting account of the methods of measuring the speed of rotation of the new high-speed centrifuges concludes this section.

Protozoology.—A ciliate, *Glaucoma* sp., was used in a study of the reactions of a protozoan to drugs, and in a study of antibody production in rabbits into which it had been injected.

Therapeutic Serology.—Dr Petrie investigated immunity to streptococcal inoculation, studying the value of cocci and of their toxin alone in antibody production in animals, including horses. The object is to produce a standardized antiserum.

An attempt to isolate from cultures of *Cl. welchii* the factor which causes an increase in the permeability of the tissues (" thereby increasing ' invasiveness ' ") was successful, and it has been possible to produce an " anti-diffusing serum ", which inhibits the invasiveness of cultures.

National Collection of Type Cultures.—250 new types were deposited for maintenance: filtrable viruses have now been included. A new decision regarding the identity of the genus " Bacillus " was made during the year [see p. 64].—J. E.

Sudan Government. (1936). **Annual Report of the Veterinary Service, 1935.** [Williams, H. B.] pp. 33. 8 tables. [Mimeographed] [fcp].

The professional staff consisted of the Director, two Research Officers and ten Veterinary Inspectors.

Diseases of Animals.

Rinderpest was wide-spread, especially during the dry season. More serum was issued than in previous years, *viz*, 136,272 doses (50 c.c.) as compared with 102,000 in 1934. Vaccine was for the first time used on a large scale, 41,646 doses being issued. Even so, not only were supplies insufficient, but the areas infected could not be covered by the veterinary staff [each inspector has an average area of about 100,000 square miles]. Losses were thus fairly heavy.

Contagious Bovine Pleuro-Pneumonia.—The eastern frontier provinces were entirely free, and only one outbreak occurred in the Blue Nile Province. Kordofan and Darfur were, however, heavily infected as usual. Over 50,000 doses of vaccine were issued, and 243 deaths were reported.

Trypanosomiasis.—The usual few outbreaks were reported from well-known infected areas in the Southern Sudan.

F. and M. Disease.—This is always mild in the Sudan. A few outbreaks occurred near El Obeid and Kosti. No losses occurred, but the export cattle trade to Egypt was slightly hindered.

Anthrax.—No cases were reported, although three human cases of malignant pustule occurred in the Nuba Mountains; they were considered to be due to eating an infected pig.

Mange.—There was a certain amount of trouble on the "Gezira" where about 40% of working oxen developed the infection.

Diseases of Camels.—There was a heavy incidence of trypanosomiasis. Some 10,000 camels were treated with "naganol"; over 7,600 of these were privately owned animals treated on payment (cf. 3,234 in 1934). Camel mange gave less trouble than usual, the Sudan Defence Force remaining entirely free.

Diseases of Equines.—Horse-sickness levied its usual toll, casualties being noticeably heavy in animals not immediately rested when the first suspicious symptoms presented themselves. Vaccine, imported from Kenya by air, was used in one bad area towards the end of the year, but the results cannot be reported until 1936. Epizootic lymphangitis was rather less prevalent than usual.

Rabies became more wide-spread, 61 animals of several species being affected. Most of the cases occurred in towns. Movement of dogs was restricted and the campaign against wild carnivora intensified.

Trade in Livestock and Products.

Cattle valued at £.E.63,796, and sheep and goats valued at £.E.21,034 were exported; this is an increase of £.E.34,465 over the 1934 figures. Eritrea was responsible for some of this increase before refusing entry on account of alleged cont. bov. pleuro-pneumonia (of which the frontier provinces of the Sudan were entirely free).

Camel exports rose to probably 40,000 head or more. Customs records show 12,652 as exported to Eritrea before the imposition of sanctions [transport animals] in connexion with the Italo-Abyssinian war.

Allowing for unauthorized exports, the figure was probably nearer 20,000. About 22,500 were exported to Egypt. [Their value is not stated, but the average value was probably not far short of £.E.7, making a total of at least a quarter of a million pounds].

Hide exports rose from £.E.34,788 in 1934 to £.E.45,768; skins fell from £.E.75,901 to £.E.54,403; clarified butter rose from £.E.24,640 to £.E.27,300.

A campaign of propaganda and demonstration on the curing of flint-dry hides was instituted in selected areas. The prices realized by better cured hides were roughly 20% higher than those of average market samples.

Local slaughter demands remained roughly at their usual level in abattoirs in which records are kept. In these, 21,548 cattle, 161,659 sheep and goats, and 1,478 camels were slaughtered.

Improvement of Livestock.

Castration of unsuitable bull calves with bloodless emasculators continues. The Baggara (pastoral) tribes have now had ample proof of the rapidity and safety with which their own Tribal Veterinary Retainers can carry out the operation, and the Retainers themselves are keen.

Inquiry has been made as to the existence of herds or types of cattle resistant to trypanosomiasis. So far it seems that these cattle are either in fly-free zones, or, if they are not, that they die at much the same rate as ordinary cattle.

The use of Arab sires to improve local horses continues.—S. C. J. Bennett.

Sudan Government. (1936). **Annual Report of the Veterinary Research Officer, 1935.** [Bennett, S. C. J.]—*Rep. vet. Serv. Sudan, 1935.* pp. 25-33.

Routine and research are dealt with separately; the former continues progressively to replace the latter.

ROUTINE.

RINDERPEST SERUM.—A maximum output which usually attains about 5,000 litres is the objective. This year, being " the most favourable working period experienced so far " the output was 5,508 litres, or 110,160 " full doses " of 50 c.c. This is the largest output yet achieved.

RINDERPEST VACCINE.—This product was issued on a field scale for the first time, 41,646 doses being prepared. The glycerinated product originally introduced by Katizaki is used.

CONTAGIOUS BOVINE PLEURO-PNEUMONIA VACCINE.—There was also a record output of 51,090 doses as compared with 47,260 in 1934. One " accident " occurred, when 50 cattle out of one herd of 580 developed large swellings. Over 7,000 doses of younger generation cultures of the same strain had been safely used, thus making the " accident " difficult to explain. [More research is, therefore, obviously needed].

CAMEL TRYPANOSOMIASIS.—10,081 doses of " naganol " and an equivalent quantity of accessories were issued, as compared with the previous maximum of 4,219 in 1934.

MORBID SPECIMENS.—There was a slight increase over the preceding year, most of the specimens being of no particular interest. Five cases of lachrymal or conjunctival cryptococcus infection were diagnosed and one which took the form of ophthalmia followed by supra-orbital abscess. A case of cutaneous equine leishmaniasis was detected (the first on record).

RESEARCH.

RINDERPEST.—Research work on the glycerinized vaccine has reached a stage at which the product can be issued for field use, and a paper is being published.

CAMEL TRYPANOSOMIASIS.—Research has been mainly limited to examining records from the field on the use of a routine 4 g. dose of " naganol ", although a few laboratory experiments have also been carried out. The observations are the subject of a separate abstract [see p. 65].

EQUINE TRYPANOSOMIASIS (*Tryp. congolense* INFECTION).—A number of naturally occurring cases were treated with " surfen C " (Bayer). The dose recommended by the manufacturers cures some patients but others require larger and repeated doses; most can, however, ultimately be cured.

> " The preparation is thus an extremely valuable addition to veterinary medicine, being in fact the first drug yet available that will cure *T. congolense* with any degree of certainty, but in consequence of the individual observation that must be extended to each patient its use will be restricted to a much narrower field than obtains for example with Naganol in the treatment of camel trypanosomiasis."

BOVINE TRYPANOSOMIASIS (*Tryp. congolense* INFECTION).—" Antimosan " (Bayer) and " surfen C " (Bayer) were used in the serum laboratory at Malakal to control trypanosomiasis in serum producers. It seems that a single dose of 1 g. to 100 kg. body weight of " surfen C " is as effective as a course of five doses of 20 c.c. per 100 kg. body weight of a 40% solution of " antimosan ".

CUTANEOUS EQUINE LEISHMANIASIS.—The case detected as a field specimen was treated by local infusion with 4 c.c. of a 1% solution of berberine sulphate. Cure followed, but a troublesome local swelling developed.

I. SWITZERLAND. (1936). Office vétérinaire. [**Report of the Veterinary Division, Department of Public Economy, Switzerland, for 1935**].—*Rapp. Cons. féd. Gestion, Dép. Econ. publ. 1935.* pp. 54-58.

II. Switzerland. (1936). Complément au rapport du Conseil fédéral sur sa gestion en 1935 Office vétérinaire fédéral, Division du Department de l'économie publique. [**Supplementary Report on the Report of the Veterinary Division, Department of Public Economy for 1935**].—*Rapp. Cons. féd. Gestion, Dép. Econ. publ. 1935.* Suppl. pp. 16. 9 tables.

I. Livestock Diseases.—During the year a scheme for the joint control of streptococcal mastitis and contagious abortion was inaugurated by federal decree [*V. B.* **6.** 752]. It is a voluntary scheme and had been adopted in eight cantons by the end of the year. A similar scheme for bovine tuberculosis was inaugurated in 1934, and seven cantons had adopted it by the end of the year (1,000 farms containing 11,000 cattle).

F. and M. disease appeared in one place after having been absent for four years from Switzerland, and was quickly suppressed. The losses from swine fever were very low in 1935 (0·01 per 1,000 head).

In 1934, Switzerland accepted the League of Nations draft schemes for the international control of animal diseases, including regulation of animal transit, import and export, but as none of the adjacent countries had ratified the conventions, no progress could be made.

Livestock Trade and Meat Inspection.—International trade in animals and meat was very restricted, exports predominating. A new system of meat inspection was proposed by the Federal Veterinary Office and was under consideration of the cantons during the year.

II. A few additional notes are given about animal diseases ; the greater part of the supplement is occupied by details of meat production, trade and inspection – largely in tabular form.—J. E.

Spain. (1935). Anales de la Escuela Superior de Veterinaria de Madrid, 1935. [**Report of the Veterinary College, Madrid, 1935**]. [González Alvarez, R.] pp. 260. 8 figs. on 4 plates, 13 photographs. Madrid : Augusto Boué Alarçon. [8vo].

This volume gives general information about the Veterinary College at Madrid, with statistical information extending up to 1933.

The teaching staff includes six professors and 18 other teachers. Details are given of the curriculum, which is divided into five courses of unstated total duration ; an extra doctorate course is held. In 1933, a government decree was enacted creating the four Spanish Veterinary Colleges at Madrid, Leon, Córdova and Saragosa into university faculties.

There are several photographs of departments of the Madrid College, and numerous descriptive or scientific articles from the staff are included in the volume.
—J. E.

—. (1936). [**Work on Animal Diseases**].—*Rep. Wis. agric. Exp. Sta. 1934-1935.* pp. 7-122. 23*figs., 3 tables.

Out of numerous items of veterinary interest the following are note-worthy :–

Mastitis.—A new colour test for chloride in milk, using a reagent known as " silochrome ", was developed ; it is qualitative and rapid in action.

Bovine Tuberculosis.—While eradication has made great progress in Wisconsin, the percentage of no-lesion reactors has also increased and now amounts to one-third of all reactors : this indicates that the value of the tuberculin test diminishes as eradication nears completion.

Contagious Abortion.—Seven " ceased reactors " were placed among a herd of clean heifers and no positive blood reactions were obtained over an unstated period.

FERTILITY IN DAIRY COWS.—An interval of 30 to 60 days between calving and the next conception was found best for calf production.

GOAT'S MILK ANAEMIA in rats was found to be curable by the administration of iron and copper; the nutritive value of goat's milk was found to vary widely with the hay used.

RICKETS was caused in chickens by feeding iron salts, even though the diet was otherwise good: the iron combines with the phosphorus, removing it from the bone-forming elements available.

FLUORINE POISONING.—The toxic effect to rats was increased when thyroid extract was given in addition.

SELENIUM POISONING.—17·5 parts per million in the diet interfered with the normal growth of young rats and 70 p.p.m. killed them in two weeks.

PURE STRAINS OF SORGHUMS were grown with the object of supplying seed for sowing sudan grass relatively free from cyanogenetic glucoside: hybrids have been found to be potentially more dangerous to stock.

PITUITARY EXTRACT.—The gonado-stimulant action of pituitary extract was demonstrated in virgin calves and heifers.—J. E.

SUMULONG, M. D. (1936). **The Establishment and Growth of the College of Veterinary Science [Philippine Islands].**—*Philipp. J. anim. Indust.* **3.** 77-135. 7 photographs on 5 plates, numerous tables.

The history of veterinary education in the Philippine Islands is given in detail. Up to 1909 all veterinary work was carried out by Americans and in that year the Philippine government founded a veterinary college for Filipinos at Pandacan, Manila. It was opened in June, 1910, with Dr A. R. WARD as dean. In 1912, Dr BOYNTON became dean and advised the transfer of the college to San Lazaro, where it remained until 1919, when it was moved to Los Baños. Finally, in 1933, the college was transferred to Pandacan.

Between 1911 and 1926, the curriculum extended over five years, the first year being partially spent on cultural subjects. In 1926, the course was shortened to four years – its present length. Details of subjects are given in tables. The number of students has fluctuated considerably and is now about 70. Since 1926 the teaching staff have all been Filipinos. Gregorio SAN AGUSTIN is the present dean: he is assisted by nine other teachers.

The article concludes with a useful reference list of papers published by past and present members of the staff.—J. E.

BOOK REVIEWS.

BANG, B. (1936). **Selected Works.** pp. 560. 4 text figs., 19 figs. on 6 plates, 22 tables. [Numerous refs.] Copenhagen: Levin & Munksgaard, and London: Humphrey Milford. [8vo] [Kr. 30].

At the publishers' request Bang himself began to select articles for inclusion in a special volume and Prof. Vald ADSERSEN finished the selections after Bang's death in 1932.

The volume contains 26 articles which cover Bang's work in three sections – the first section consists of a group of articles recording his earlier research into various subjects, the second, of a group on tuberculous milk and the third, of a group on the use of tuberculin in the eradication of bovine tuberculosis (Bang's method). The articles originally appeared between 1884 and 1932 and are given here in English, French or German. There are several plate illustrations, and a portrait of Bernhard Bang, taken in 1920, forms the frontispiece.

The book is a fitting memorial to a great veterinarian, and is most valuable as a reference book to Bang's work.—J. E.

DRABBLE, J. [Vet. Officer in Charge of Inspection, N.S.W. State Abattoir; Lecturer, Demonstrator and Co-Examiner in Meat Inspection, Univ. Sydney; Lecturer in Meat Inspection, Sydney Technical Coll.] (1936). **Textbook of Meat Inspection.** pp. xv + 353. 47 figs. on 32 plates. Sydney: Angus & Robertson, Ltd. [8vo] [21s.]

This text-book has been written to assist students desirous of obtaining the certificate granted to lay meat inspectors. It is not intended to be a book of reference, and therefore deals briefly with the *post-mortem* appearances of the most common diseases observed in abattoirs. To give some idea of how disease is spread throughout the body and the reason for examining the lymph nodes, chapters dealing with elementary osteology, digestion, anatomy and physiology are included. Information as to canning is also supplied.

A glossary at the end of the book gives some of the scientific and trade terms used in the text. The author has included questions at the end of some of the chapters and a list of questions set at previous examinations.

Although the book contains nothing that the trained veterinary meat inspector should not already know, it is certainly well adapted for the purpose intended and can be recommended.

The information is clearly expressed; the plates are good, and the publishers have done their work well.—T. DUNLOP YOUNG.

—. (1936). **Manual of the Silver Fox and Fur Farming Industries.** pp. 132. 7 figs. [6th Edit]. Minneapolis: American National Fox & Fur Breeders Association. [8vo] [25 cents].

This is a practical handbook for breeders of silver foxes, blue foxes, mink, musk rats, racoons, karakul sheep, martens, skunks, beavers and badgers; about three-quarters of the book is devoted to foxes.

The text is concise and clear and is well illustrated by photographs. There is a chapter on external and internal parasites, but no information on bacterial or virus diseases. Advice is given on methods that the owner can himself apply and is sound. The booklet is useful for veterinarians wishing to become acquainted with fur animal breeding.—J. E.

BROOK, G. B. [D.Sc. Edin., F.R.C.V.S.] (1936). **Experimental and Clinical Studies of the Spine of the Dog.** pp. ix + 122. Numerous figs., charts and plates, 9 tables. [Numerous refs.] London: Baillière, Tindall & Cox. [8vo] [5s.]

The work described was undertaken to develop the technique of cistern puncture for the collection of cerebrospinal fluid from dogs. The opportunity was taken to apply radiography, with the aid of radiopaque iodized oils, to the study of the anatomy of the sub-arachnoid space, and to study the practical application of radiography to the diagnosis of spinal injuries.

The bulk of the book is concerned with technique, which is dealt with in great detail – an advisable practice when, as here, the field is unexplored – but it is a pity that no index is provided. The contents list, however, is very full.

Workers on this subject will find the book very valuable as a review (with full bibliographies) of past work and a guide to new work, and practitioners will find the excellent photographic and X-ray figures of great help in clinical radiography.

—J. E.

ARON, M. [Professeur à la Faculté de Médecine de Strasbourg], & GRASSÉ, P. [Professeur à la Faculté des Sciences de Clermont-Ferrand]. (1935). Précis de biologie animale. [**Animal Biology (Zoology)**]. pp. viii + 1016 + 31. Numerous figs., 6 tables. Paris : Masson et Cie. [8vo] [Fr. 80].

This is a text-book of zoology and has been revised to conform with the amended curriculum for French medical students.

It is in five parts dealing respectively with (1) the cell and cellular reproduction ; (2) cellular physiology ; (3) the general metabolism and physiology of the animal body ; (4) systematic zoology, and (5) the principle of evolution. Thus it is really a joint volume on zoology, physiology and elementary genetics.

The authors state that they have tried to keep to essentials without serious omissions or excessive detail, and they appear to have succeeded admirably. There are 642 figures, mostly line drawings. They are all excellent, and there is a good index and a contents list at the end of the volume.—J. E.

—. (1935). **Glandular Physiology and Therapy. A Symposium Prepared under the Auspices of the Council on Pharmacy and Chemistry of the American Medical Association.** pp. 528. 8 figs., 4 tables, 8 graphs. [Numerous refs.] Chicago : American Medical Association. [8vo] [$2.50].

This work consists of articles by leading endocrinologists, mainly American, which have been collected and re-edited by the Council on Pharmacy and Chemistry and which are now published in book form. This has been done in order that clinicians and others may have at hand a guide to what is established and what is still theoretical in the rapidly changing science of endocrinology.

An account is given of the functions and dysfunctions of the various ductless glands but, as may be expected, more than half the book deals with the pituitary gland and the sex hormones. It is now practically certain that the anterior pituitary produces five main hormones, growth hormone, gonadotropic hormone, thyrotropic hormone, adrenotropic hormone, and prolactin which stimulates the mammary gland. It is at present necessary to assume that there are two hypophyseal gonadotropic hormones, one stimulating the follicle and the other producing luteinization of the theca and mature granulosa. So-called prolan A, present in the urine of castrates, appears to consist chiefly of the former, whereas the placental hormone of pregnancy, formerly considered to be prolan A plus prolan B, more nearly resembles in its action the luteinizing fraction.

The basis of biological tests for pregnancy lies in quantitative and not qualitative hormonic differences of the blood and urine, since there are no specific hormones of pregnancy. The demonstration of increased amounts of gonadotropic hormone in the urine forms a reliable test for pregnancy in women, 99 per cent. of the results being correct.

Included in the book are sections dealing with the therapeutic value of the various hormones. The preparations of these substances at present available to the practitioner and their proper route of administration are also considered. In the human subject, it appears that oestrogenic preparations are of little value in the treatment of amenorrhoea but are of value for rectifying menopausal disturbances. It is pointed out that, although amenorrhoea is often accompanied by sterility, hormonal treatment of the latter condition is most unsatisfactory. As yet, there is no corpus luteum preparation on the American market which contains definite amounts of progestin.

In conclusion it may be said that, while the book is necessarily somewhat disjointed, it should prove of great value both to the research worker and to the clinician.—J. A. NICHOLSON.